HARVARD MEDICAL
ALUMNI BULLETIN SUMMER 1988



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5)	12/2/88	Sky	14 days, South America, Buenos Aires to Rio, 4 ports	3,864
6)	10/24/88	Sea	15 days, Transcanal, Ft. Lauderdale* to San Francisco, 6 ports *may embark 10/21 in New York	3,179
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12/16/88	Sky	22 days, South America, Rio to Ft. Lauderdale, 6 ports	6,059
12/21/88	Sea	15 days, Transcanal, Ft. Lauderdale to Los Angeles, 4 ports	3,659
12/16/88	Sun	18 days, Transcanal, Ft. Lauderdale to San Francisco, 8 ports	5,135

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Date	Ship	Itinerary	per person rates from
1/5/89	Sea	24 days, South Pacific, Los Angeles to Sydney, 8 ports	$6,085
1/14/89	Sea	15 days, South Pacific, Honolulu to Sydney, 4 ports	4,205
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6/19/89	Sea	16 days, Far East/Pacific, Tokyo to San Francisco, 2 ports	4,115
8/28/89	Sea	12 days, South Pacific/Far East, Vancouver to Tokyo, 1 port	3,200

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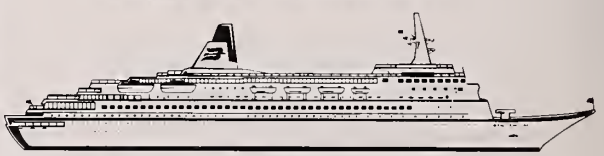
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Cover: Photo by Eliot Porter. Redbud tree in Red River Gorge, Kentucky; April 1968.

INSIDE H.M.A.B.

If we just stopped a moment, and really *saw* and really *listened*, perhaps we could recapture the sense that is often lost as we grow older—the sense of wonder. For most people wonderment becomes peripheral, writes Melvin Konner '84. For some—artists and scientists—it is central to existence.

This issue of *HMAB* is a tribute to creativity among HMS physicians. We reprint a short story by fourth-year student Ethan Canin from his highly-acclaimed collection, the last chapter of Hans Zinsser's *As I Remember Him*, and a whimsical essay on punctuation by Lewis Thomas '37. ("Anyone who can rub two parentheses together to produce the fragile flame of humor must be creative," comments *HMAB* editor Gordon Scannell.)

Eliot Porter '29 never lost his boyhood wonder, though he switched his explorations of nature from medicine to photography. We include a special color insert with a selection of his works. Turning the table to other alumni, we announce a photo contest on page four.

In this issue also are poems by Albert Anderson '52 and Susanne Learmonth '52. Francis Moore '39 discusses the art of music and reminisces about music at Harvard. First-year student Rafael Campo describes how creativity has made its way into the curriculum.

Mark Altschule '33 remarks on creativity in medicine through observations in history. And, thanks to Dick Wolfe's amazing recall, we dug out an excerpt from an unpublished book by Fuller Albright on enlightened minds and progress in science. We also excerpted a few words about charismatic leaders and teachers by HMS psychologist Margaret Brenman-Gibson.

Some HMS graduates have been creative further afield. We close with an account by Alfred Bollet on Leonard Wood (Class of 1883), a man with much derring-do, who just missed clinching the Republican party's nomination for president in 1920.

—Ellen Barlow

HARVARD MEDICAL
ALUMNI BULLETIN

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ALUMNI COUNCIL: PRESIDENT'S REPORT

Creativity in the HMS Alumni Office

by James A. Pittman Jr.

Sometimes a little creativity goes too far. In administrative situations, for example, stability and predictability may be valued more than rollicking, unpredictable, imaginative innovations, or worse, than great centralized imaginative changes that oppress the silent masses or are just ignored. As so frequently happens, your medical alumni office has tried over the past two years to have it both ways and has thus "steered a middle-of-the-road course," sometimes veering erratically to the right or the left, but so far avoiding the ditch.

I've always thought internists were more creative than surgeons, but my predecessor, Clem Hiebert, HMAA's 61st president, had all sorts of new ideas and, being a surgeon, implemented them. One was an "HMAA Council retreat," which was a meeting of the council away from the school (the Ritz Carlton downtown) with a different, council-generated format of committees with special assignments to generate new ideas. Results of these and other efforts included a revision of the HMAA constitution and bylaws, eliminating past president as an *ex officio* position on the council and creating an additional post for president-elect.

About that time Will Cochran, director of alumni relations, decided to leave the DAR position. This offered the council another opportunity to be creative. We voted unanimously to abolish the office of DAR as previously constituted and decided to search instead for a super-administrator who would be a non-MD. This was duly announced in the Fall 1986 *Bulletin*. Just as that issue of the HMAA equivalent of *Pravda* was going to press, the council reconsidered the whole matter and voted, again unanimously, to rescind the prior action and resume the search for a physician DAR.

The association was most fortunate that its top selection for DAR accepted, though he did not wish to devote as much time to it as had been required of his predecessor, Will, and as had proved impossible for a clinically active physician. We also voted to proceed, therefore, with a high-level administrator as originally envisioned, but to retain a physician as DAR for liaison at medical meetings around the country. This DAR is, of course, Bill McDermott, Muhammed Ali's herniorraphist. We were doubly fortunate to find Nora Nercessian, PhD, for the administrative post. (*She* is going to be *really* creative!)

During all these council discussions there often seemed to be a somewhat aggressive undertone of, "Let's take over the medical school and run it right!" (Perhaps it's part of the Harvard Spirit.) So the Winter 1986-87 *Bulletin* contains your president's views that the goals and functions of our Alumni Association should be to serve a *votive* function, bearing in mind that "votive" means "offered or performed in fulfillment of a vow or in gratitude or devotion." The new arrangements in the alumni office should facilitate this.

We look forward to new quarters for the alumni office in Building A, or at least newly renovated offices. The space crunch at HMS is unbelievably intense—brilliant investigators nearly sit in each other's laps, and all funded. We may not get it all perfect immediately,

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but improvements are on the way, and Doris Bennett will pursue this vigorously as your new president this coming year.

Other things that need to be done are to establish better communications between the medical students and members of the Alumni Association; to further develop the HMS student support network that Paul Ramsey initiated in Seattle, whereby senior or junior students who visit your towns to look for internships can find guidance and perhaps sustenance from an older alum; to further computerize the activities of the association, already begun under A.W. Karchmer; to reactivate the alumni survey committee with questions such as Ben Roe's: "Is professional dissatisfaction an important reason for the current decline in applicants for medical schools, and if so, should and can anything be done about it?"; and to foster better communication among all HMS alumni throughout the world for worthy causes, such as the support of both the school and medicine at large.

All this creativity—with its unanimous vote to go north, followed almost immediately by another vote to go south instead—may have convinced our faithful sustainer himself, Ralph Travis, associate DAR for many years, that the council had finally gone *completely* berserk. In any case, Ralph is retiring this June to move to the quieter environs of Cape Cod, where he can view us from a safer distance. He has been a rock of stability through all the above, and I personally appreciate his support and good work.

Perhaps the thing I am most proud of during my time as your president is not prominent in any of our minutes or proceedings. Last year Will Cochran and I cooked up a scheme to designate a poet laureate for the Class of '52, and there was only one possible choice: George S. Bascom, the surgeon from Manhattan, Kansas. The main need for medicine now is a reaffirmation of its purpose and its spirit, and George's poetry captures both. His poetry, embedded in the daily practice of medicine, is one example of creativity and reality we cannot afford to lose in these days of DRGs and PROs.

Will arranged for George to present some of his poems at last year's Alumni Day. He received a standing ovation from all assembled. I've just phoned him to ask what he would choose from his work to convey his feeling to his fellow alumni, and he chose this:

. . . in the midst
of all this tumult, feeling a
serious satisfaction,
I thought, maybe after all
this is what I was meant for. □

James A. Pittman Jr. '52 is dean, professor of medicine, and professor of physiology at University of Alabama School of Medicine, the University of Alabama at Birmingham.



YOUR TURN? CALL FOR ENTRIES

At last the Dodo said, "*Everybody* has won, and *all* must have prizes."

The *Harvard Medical Alumni Bulletin* is sponsoring an alumni photo contest, for the fun of it. Everybody will win. Three entrants will even win a prize.

Theme: "people and places"

Format: black and white print, up to and including 8 x 10 inches

Number: limited to one entry

Deadline: January 1, 1989

Prizes: We're working on it!

Restrictions: limited to HMS alumni who are amateur photographers

We reserve the right to publish the winning photographs. We will handle entries with the utmost care, but cannot assume responsibility for damage or loss. If you would like your photo returned, please enclose a self-addressed stamped envelope.

PULSE



Alvin Poussaint

BHO Holds Forum on Minority Health Status

Health issues pertinent to minority communities—infant mortality and low birth weight, chemical dependency, violence and AIDS—were discussed at a forum presented April 9 on Black Alumni Day. The forum was organized by the student-run Black Health Organization under the auspices of the student affairs office and the HMS Alumni Association.

The afternoon-long program, moderated by Cheryl Dorsey '91, centered on "Two Years Beyond the Heckler Report: Persistent Inequalities in the Health Status of Minorities." The Heckler report, issued in August 1985 by the Department of Health and Human Services, declared that overall health in the U.S. had improved over the past century, but that there continued to be a significant disparity in health indicators between minorities and the population as a whole.

Panelists addressed four areas of concern and the role of the physician at the local, community and national levels. DeWayne Pursley '82, a fellow in

PHOTO BY BARBARA STEINER

neonatology at Brigham and Women's Hospital, spoke on infant mortality and low birth weight, followed by a discussion led by JudyAnn Bigby, HMS instructor in medicine, on chemical dependency. Alvin Poussaint, HMS associate professor of psychiatry and associate dean for student affairs, discussed homicide and suicide, and Leon Eisenberg, chairman of social medicine and health policy, addressed AIDS.

The day's activities ended with a reception, dinner and business meeting of the Black Alumni Association. □

By Any Other Name

As usual, Dean Daniel Tosteson took a front-row theatre seat to watch the best in medical satire at this year's second-year show in February. He appeared intermittently pensive and amused as his stage name evolved from Dean Testosterone to Toasteroven to Tostaround to Toast-of-the-Town.

And that wasn't all. The new Medical Education Center, dubbed "MECCA" (Medical Education Center that Cost A lot), took its share of the blows. Barium Manic-low (David Jaffee) performed a smashing solo opener about the building that had apparently plunged HMS into "hypocashemia," a state of insufficient funds.

How to find the bucks. Testosterone pleaded first with the unrelenting Bokfather, "The endowment will never miss a dozen million," and only later settled on a scheme to hold a "Save the Mecca" telethon. To kick it off right, he enlisted the help of Deans Flatterman, Eisenberg and Croissant to man the phones. Eisenberg was the first to find something better to do. "Oh! I have to go and make a first-year student feel *particularly* welcome!"

Scenes of the marginally successful telethon were interspersed with promotional interludes about the school. Prospective donors watched as Drs. Fuster and Mike Megasleaze in the admissions office interviewed outstanding candidates like Dexter Cardia, Nora Blastoma and Anna Osmia. There was a section on lifestyles of the rich and famous physiologists. Cadavers turned into muscular sugar-plum fairies, and medical school athletes competed in Olympic categories like the Heimlich Maneuver.

One student told it straight. "It's nine o'clock in biochemistry. Why I'm here at all is a mystery. When they put up slides and turn the lights down, in



PHOTOS OF SECOND-YEAR SHOW BY SHARON BRAY

no time flat I'm delta bound." But to balance the scales, an older alum bragged about how hard things used to be: "We had to get up a half an hour before we went to bed! No vacations, no holidays, and we paid them!" □

A Match Made in Illinois

Seventy percent of 159 HMS students matched with their first choice in the 1988 National Resident Matching Program, and 85 percent received one of their top three choices of residencies.

Medicine still attracts the largest number of HMS graduates, but continues to slip in popularity: from 70 students in 1981 to 46 last year to 33 this year. The number of students selecting pediatrics this year is 22, up from last year's 14, placing pediatrics second in popularity and surgery third, with 19 students.

Interest in radiology is growing (13, up from 8 in 1987); and, whereas only 8 HMS graduates went into otolaryngology from 1983-87, this year alone 6 students selected that specialty.

The list of graduates and their intended specialties follows.

ANAESTHESIA

Angle, Pamela
Massachusetts General Hospital

Dylewsky, William
Massachusetts General Hospital

Leong, Rebecca
Massachusetts General Hospital

Sonner, James
University of California/ San Francisco

Thorup, Steven
Massachusetts General Hospital

Uggeri, Mark
University of Virginia

DERMATOLOGY

Waldman, Barry
UCLA Medical Center

EMERGENCY MEDICINE

Garcia, Richard
University of Southern California Medical Center

FAMILY MEDICINE

Cooper, Paul
St. Mary's Hospital, CO

Donohue, Jennifer
University of Wisconsin

Rak, Ellen
Providence Medical Center, WA

Saper, Robert
University of California/ San Francisco

MEDICINE

Berggren, Ruth
Massachusetts General Hospital

Boerlin, Harold
Roger Williams General Hospital, RI

Bolden, Norman
Case Western Reserve University, OH

Carpenter, Regina
Massachusetts General Hospital

Chiao, Judy
Presbyterian Hospital, NY

Chung, Daniel
Massachusetts General Hospital

Chung, Jay
Brigham & Women's Hospital, MA

Connick, Elizabeth
Presbyterian Hospital, NY

Davila, Marta
University of California/ San Francisco

Diaz-Rohena, Roberto
Mt. Auburn Hospital, MA

Duerr, Robert
University of Chicago Medical Center, IL

Duong, Tao
Stanford University Hospital, CA

Emanuel, Ezekiel
Beth Israel Hospital, MA

Epstein, Jonathon
Brigham & Women's Hospital, MA

Falo, Louis
Massachusetts General Hospital

Franklin, Nancy
Cedars-Sinai Medical Center, CA

PHOTOS OF MATCH DAY BY SHARON BRAY AND BARBARA STEINER

48th Soma Weiss Undergraduate Assembly



Tom Gephart

Asked to make a few prefatory remarks before the 48th Annual Soma Weiss Undergraduate Assembly on April 6, your editor had the chance to honor the memory of a classmate, F. Thomas Gephart '40, the prime mover of this event.

In the spring of 1940 with the world at war, but before the fall of France, undergraduates were responsible people. I remember distinctly that Tom dropped into my room one evening to say, "You and I seem to be getting along reasonably well but, you know, all things considered we are pretty dull fellows. Let's find out what the bright members of our class are doing."

With no charter or mandate we recruited an undergraduate committee of classmates—in addition to ourselves, Addison Brenizer, John Hickam, Bill Hickey, Tom Weller and, to insure at least one year's continuity, two from the third-year class, Ed Ahrens and John Schilling. We also had sense enough to enlist the bluest of the blue faculty for an advisory committee—Drs. George Minot, Edward Churchill, Baird Hastings, Soma Weiss and George Wislocki. The assembly has met annually ever since, war or no war.

The original purposes have been faithfully observed: to make known to undergraduates the work of their colleagues; to provide those colleagues with an opportunity to present their work to an interested audience; to offer undergraduates an opportunity to become acquainted with methods of investigation; and, finally, to demonstrate the possibilities of undergraduate research.

The assembly was honored by incorporating the name of Soma Weiss, one of its first and most rigorous advisors, after he died suddenly in 1942. This 48th meeting of the assembly is also a memorial to Thomas Gephart, who died eleven years ago. □

—Gordon Scannell '40





Graubert, Timothy
Yale-New Haven Hospital, CT

Grossbard, Caren
Brigham & Women's Hospital, MA

Gurley, Rita
University of California/ San Francisco

Harbury, Lisa
Beth Israel Hospital, MA

Haupert, Frederick
New England Medical Center, MA

Hillegass, William
Brigham & Women's Hospital, MA

Juhn, Peter
Hospital of the University of Pennsylvania

Karahalis, Stephanie
Brigham & Women's Hospital, MA

Markowitz, Steven
New York Hospital

Mayer, Ellen
Massachusetts General Hospital

Neptune, Enid
University of California/ San Francisco

Olans, Lori
Brigham & Women's Hospital, MA

Reid, Andrea
Massachusetts General Hospital

Rogers, Campbell
Brigham & Women's Hospital, MA

Ryan, Edward
Massachusetts General Hospital

Senechek, David
Mt. Zion Hospital, CA

Shainfarber, Linda
Brigham & Women's Hospital, MA

Sylvestre, Diana
Brigham & Women's Hospital, MA

Tager, Andrew
Massachusetts General Hospital

Teerlink, John
University of California/ San Francisco

Tocco-Bradley, Rosalie
Mt. Auburn Hospital, MA

Wilson, Madeline
Yale-New Haven Hospital, CT

NEUROLOGY

Greenberg, Steven
University of California/ San Francisco

Sandrock, Alfred
Massachusetts General Hospital

Schiff, David
Harvard-Longwood Area, MA

Warach, Steven
Harvard-Longwood Area, MA

Waterhouse, Elizabeth
Harvard-Longwood Area, MA

OB/GYN

Ecker, Jeffrey
Brigham & Women's Hospital, MA

Gochberg, Jan
Brigham & Women's Hospital, MA

Murin, Valerie
University of California/ San Francisco

Reyes, Caroline
University of Southern California Medical Center

OPHTHALMOLOGY

Bernstein, Paul
UCLA-Jules Stein Eye Institute

Cohen, Steven
University of California/ Davis

Faghih, Katayoun
New York Eye and Ear Infirmary

Fountain, Tamara
Johns Hopkins/ Wilmer Institute, MD

Gliklich, Richard
Massachusetts Eye and Ear Infirmary

Gonzalez, Victor
University of Southern California Medical Center

Levin, Leonard
Massachusetts Eye and Ear Infirmary

Okada, Annabelle
Massachusetts Eye and Ear Infirmary

Regillo, Carl
Jefferson University/ Wills Eye Hospital, PA

Wong, Samuel
Manhattan Eye, Ear & Throat, NY

ORTHOPEADICS

Callaway, Hadley
Hospital for Special Surgery, NY







Diduch, David
University of Virginia/ Charlottesville

Hanway, Jeffrey
Hospital for Special Surgery, NY

Kuhlman, Jeffrey
Hospital of the University of Pennsylvania

Ozuna, Richard
Harvard Combined Program

OTOLARYNGOLOGY

Blevins, Nikolas
University of California/ San Francisco

Joyner, Byron
University of Pennsylvania

Key, Phillip
University of Southern California Medical Center

Nuss, Roger
Massachusetts Eye and Ear Infirmary

Sussman, Stephen
University of California/ San Francisco

Terrell, Jeffrey
Massachusetts Eye and Ear Infirmary

PATHOLOGY

Lester, Susan
Brigham & Women's Hospital, MA

PEDIATRICS

Bailey, Claire
Children's Hospital, MA

Curran, Arlene
Children's Hospital, PA

Fishman, Martha
Children's Hospital, MA

Frim, Sara
Children's Hospital, PA

Gottdenker, Robin
Children's Hospital, MA

Gutierrez, Jorge
University of California/ San Francisco

Herman, Gary
University of California/ San Francisco

Hoube, Jill
Children's Hospital/ Los Angeles, CA

Huttenlocher, Anna
Children's Hospital, MA

Johnson, Lise
Massachusetts General Hospital

Lubas, William
Presbyterian Hospital, NY

McCarthy, Claire
Children's Hospital, MA

Rosado, Mayra
UCLA Medical Center

Rosenfeld, Howard
Children's Hospital, MA

Rosenfeld, Margaret
University of Washington Affiliated, WA

Sadler, Karen
Children's Hospital, MA

Salob, Stacy
Mt. Sinai Hospital, NY

Schuster, Mark
Children's Hospital, MA

Sege, Robert
Children's Hospital, MA

Stack, Anne
Children's Hospital, MA

Teach, Stephen
Children's Hospital, MA

Torres, Laura
Children's Hospital, MA

PRIMARY CARE

Aragon, Tomas
University of California/ San Francisco

Burack, Jeffrey
University of California/ San Francisco

Craner, James
Rhode Island Hospital

Dudley, Lorraine
Rhode Island Hospital

Fried, Terri
Rhode Island Hospital

Harris, Kathryn
Rhode Island Hospital

Jasso, Nancy
UCLA Medical Center

Kaye, Elaine
Massachusetts General Hospital

Semigran, Gail
Massachusetts General Hospital

Whitman, Cynthia
University of California/ San Francisco

Wilson, Fiona
University of California/ San Francisco

PSYCHIATRY

Brodey, Benjamin
Yale-New Haven Hospital, CT

Bures, Joanna
McLean Hospital, MA

Chaplin, Margaret
Presbyterian Hospital, NY

Ely, Elissa
Cambridge Hospital, MA

Goodman, Miriam
McLean Hospital, MA

Masterson, Brian
University of Iowa

Silk, Adam
Beth Israel Hospital, MA

Wood, Paul
McLean Hospital, MA

RADIATION THERAPY

Healey, Elizabeth
Harvard-Joint Center for Radiation Therapy, MA

Kavadi, Vivek
M.D. Anderson Hospital, TX

McIntyre, James
Massachusetts General Hospital

RADIOLOGY

Cheung, Luke
Hospital of the University of Pennsylvania

Disler, David
Massachusetts General Hospital

Forbes, Randall
University of California/ San Francisco

McFarland, Eric
Harbor-UCLA Medical Center

Mell, Harriet
Stanford University Hospital, CA

Oser, Allen
Barnes Hospital, MO

Spencer, Richard
Duke University Medical Center, NC

Stolpen, Alan
Hospital of the University of Pennsylvania

Toxey, Julia
New England Medical Center, MA

Underberg-Davis, Sharon
Hospital of University of Pennsylvania

SURGERY

Bergus, Boris
Medical College of Ohio

Del Rio, Andrew
University of Washington Affiliated, WA

Denlinger, Steven
New England Deaconess Hospital, MA

Eagon, John C.
Barnes Hospital, MO

Fortes, Williefred
Hospital of St. Raphael, CT

Frim, David
Massachusetts General Hospital

Haigh, Linda
Brigham & Women's Hospital, MA

Hey, Lloyd
Brigham & Women's Hospital, MA

Lee, Maxine
Yale-New Haven Hospital, CT

Lee, Raymond
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Meyer, Jonathan
University of Southern California Medical Center

Nguyen, Mai
Brigham & Women's Hospital, MA

Priebe, Cedric
Massachusetts General Hospital

Richardson, William
Massachusetts General Hospital

Samaniego, Armando
University of California/ Davis

Shrager, Joseph
Hospital of the University of Pennsylvania

Spangler, Gregory
New York University Medical Center

Tan, Swee Lian
New England Deaconess Hospital, MA

Taub, Ethan
Massachusetts General Hospital

Urioste, Debbie
University of Iowa Hospitals

Weston, Lynn
Massachusetts General Hospital

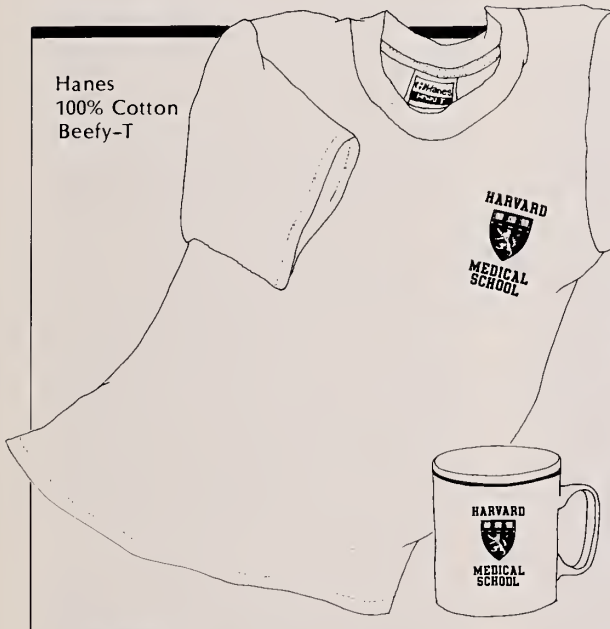
Wilson, Robert
St. Luke's-Roosevelt Hospital, NY

TRANSITIONAL

Grayson, Galen
Lemuel Shattuck Hospital, MA

UROLOGY

Chang, Debuene
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BOOK MARKS

The Cult Phenomenon

THE GOLDEN GURU: THE STRANGE JOURNEY OF BHAGWAN SHREE RAJNEESH, by James S. Gordon, the Stephen Green Press, Lexington, Massachusetts, 1987.

by Herbert Benson

James S. Gordon '66 in *The Golden Guru* describes the remarkable life of Bhagwan Shree Rajneesh from the eyes of both a subjective disciple and an objective physician. In so doing, he has produced a highly readable and fascinating book that frequently resembles a fast-paced novel.

Chandra Mohan Jain was born in central India in 1931. The name Rajneesh, derived from *raja* or king, was later added by his family. After a tumultuous, rebellious youth, Rajneesh underwent "enlightenment" at age 21, following prolonged periods of meditation and exercise. He experienced "a new energy," "a new freedom." "It was as if I was exploding, as if I was mad with blissfulness." There was "throbbing life all around me," "a great storm of light, joy, ecstasy" and "no gravitation. . . . I was feeling weightless. . . . For the first time the drop had fallen into the ocean. . . . I was the ocean . . . everything became luminous . . . alive Time disappeared . . . the whole universe . . . luminous, throbbing, became a benediction."

Meditation, prayer and rhythmic exercises that incorporate two basic steps—the repetition of a word, sound, prayer, phrase, or repeated movement, and the passive disregard of everyday thoughts when they occur—elicit a predictable, reproducible and measurable set of physiologic changes. These include decreased oxygen consumption, blood pressure, heart rate, respiratory rate, arterial blood lactate and increased production of delta, theta and alpha waves on the electroencephalogram. These changes are consistent with decreased sympathetic nervous system activity and the condition has been labeled the relaxation response. It is the counterpart of Cannon's fight-or-flight response.

Some who regularly elicit the relaxation response experience what we in the West call "peak experiences." In the East, they have been labeled "enlightenment." The relaxation response is a state that enhances the probability of having a peak experience. To describe the feeling associated with peak experiences, Westerners use such words as "unboundedness," "infinite correlation," "indescribable well-being," and "intense wakefulness." This phenomenon is the condition in which religious conversions are made and explains, in part, how repetitive prayer facilitates the likelihood of such experiences.

As Gordon describes in fascinating detail, after Rajneesh's enlightenment, he and his new-found disciples founded a community in Poona, India. He decided that all disciples should wear orange robes, a *mala* (a necklace of 108 beads representing, according to Rajneesh, the 108 forms of meditation), and a locket containing a picture of Rajneesh. Rajneesh gave many of his followers Sanskrit names that represented a potential to which they could aspire.

Many disciples were attracted to Rajneesh by his liberal attitudes toward sex and his communal indulgences in which sexuality was used to experience "self-transcendence." Life with Rajneesh was characterized by the performance of combined meditations and physical exercises called "Dynamic," sexual permissiveness, and attendance at lectures given by Rajneesh.

In 1981 Rajneesh founded the Rancho Rajneesh in Oregon. Its population of highly educated, successful Westerners had often given up their careers to be with Rajneesh and to absorb his teachings. We follow the development of this "Utopian" community from its heady and arrogant beginnings when Rajneesh owned 93 Rolls-Royces, to its paranoia and ultimate dissolution in 1986 after mass poisonings.

Gordon gives us an absorbing history of this cult and leads us to ques-



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tion how and why these phenomena occur.

Immediately after meditational practices, the mind appears to be more receptive to influence. Information presented at this time is apparently absorbed more completely. Gordon describes this process in intimate detail, although it is not recognized as such, as Gordon himself partakes in Dynamic meditations and exposure to the teachings of Rajneesh. We view with some horror how the other disciples become addicted to and convinced of the unquestionable veracity of Rajneesh's philosophy and authority. Like many other cult leaders, Rajneesh utilized this state of mental plasticity to manipulate and alter the belief systems of initially rational and independent-thinking followers. We read of Gordon's own reluctance to abandon the teachings of Rajneesh even after the guru's downfall and expulsion from the U.S.

These altered mental states, which can result in such destructive cult behaviors, can also be used under other circumstances for better health and spiritual well-being. The state of mental plasticity following meditational practices can be used to rid people of often crippling neuroses and stress-related bodily ailments. And, as our established religions have often shown, prayerful, meditational activities in traditional, time-proven contexts can lead to profoundly moving, safe and beneficial experiences. □

Herbert Benson '61 is associate professor of medicine at HMS and chief of the section on behavioral medicine at New England Deaconess Hospital. He is the author of numerous books related to the relaxation response and how to tap it as resource for health and well-being.

CAMPAIGN REPORT

Thoroughly Modern Vanderbilt

It was the visionary thinking of HMS alumni in 1923 that prompted the building of Vanderbilt Hall, the first dorm for medical students in the U.S. and first dorm ever to have athletic facilities. But time has stood still inside Vanderbilt, and it is "woefully out of date." Alumni are again undertaking to raise funds with an eye to future student needs.

"The building is at a crisis point," says Yvonne Geeve, manager of Vanderbilt Hall. "We want to provide a facility that will be useful for another 60 years."

Plaster ceilings are crumbling, the fire department is concerned about code violations, and showers tend to run either very hot or very cold. The electrical system cannot accommodate all the radios, TVs and computers that go along with contemporary lifestyles. And the original furniture—including "beds as narrow as prison cots"—are still being used in the rooms.

It is also critical, says Geeve, to expand the number of rooms. It is difficult for students to find nearby, affordable apartments. And although each year hundreds of exchange students and visiting fellows are invited to the medical area on a short-term basis, at this time only six rooms can be put aside for 'transients'.

More than just a dorm, Vanderbilt also serves as an athletic complex and student union. Geeve estimates that at least five student events (parties, club meetings and other functions) are held in Vanderbilt each day. They also host professional society and alumni functions.

"Renovations are 100 percent for student enhancement," she says. An architectural firm has been hired and internal committees formed, and they are considering student input solicited through a survey before plans are drawn.

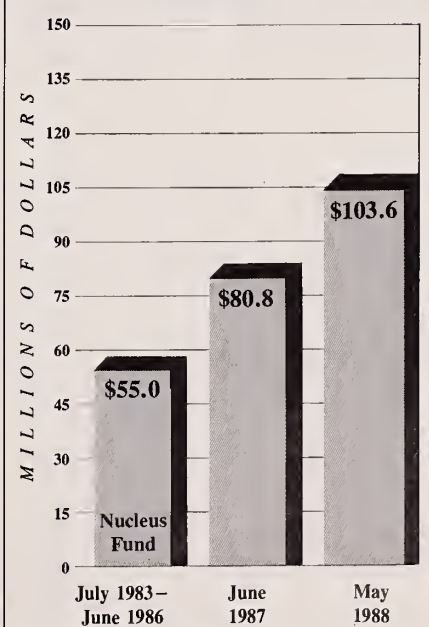
Though extensive renovations are envisioned, Geeve says that the exterior and other architectural features of historical interest will remain the same. "When students think of Harvard Medical School, they like to see something historical. It's the part of Vanderbilt they still appreciate."

Geeve would like to keep the configuration of room numbers the same, no matter how out-of-sequence they are now, so alumni can find their old rooms when they return. The plaques commemorating the original alumni donors to Vanderbilt will also stay in place.

Vanderbilt Hall renovation is a goal of the alumni regional program of the Campaign for the Third Century of Harvard Medicine. In 1923 alumni around the country reached out to other grads in their areas to raise the first chunk of money to build Vanderbilt. For this campaign, 20 regional committees—comprising over 400 alumni—will seek help again. There will be new opportunities to name a room, suite or common area; and those donating $10,000 or more will be listed on a plaque in the front hall.

"Our hope is that history will repeat itself," says Judy King, who directs the regional campaign program in the HMS office of resource development. "We hope that, as in 1923, support from alumni will set the stage for another Harold S. Vanderbilt or a foundation to round out what we need for Vanderbilt Hall." □

Campaign for the Third Century of Harvard Medicine



The Campaign reached $103.6 million in gifts and commitments as of May, 1988. The Campaign goal is $185 million.

BENCH MARKS

Sight Unseen

by Debra J. Trione



Margaret Livingstone and David Hubel

PHOTO BY KEN HAAS

It's easy to believe that things are the way we see them, or that we see things the way they are. Margaret Livingstone, associate professor of neurobiology at HMS, has begun to explain why what we seem to see isn't always what's there. It's part of her effort to define which types of stimuli activate each class of visual neuron, and how visual messages from the retina become higher perceptual understanding in the brain.

Physiological studies addressing these questions are often done using either microelectrodes that monitor single neurons, or radioactive isotopes that trace neurological function over large portions of the brain. Working with David Hubel, Enders University Professor of Neurobiology, Livingstone has also addressed these problems through "psychophysical" research—perceptual experiments in which the investigators themselves are the subjects.

Livingstone has recently described a number of psychophysical experiments in which she and Hubel tested their own perceptual responses to carefully orchestrated visual images. These experiments allowed her to "correlate a large number of empirical observations on human visual perception with anatomical and physiological findings."

Most of us think of vision as a conglomeration of factors like form, color (hue), luminance (the degree of light or dark), movement, depth and texture, which all seem to vary independently of each other. Circular shapes can appear to be either orange or green, light or dark, near or far, still or in motion, large or small. Our intuition that these perceptual factors vary independently is supported by some clinical and physiological evidence. Highly specific visual abilities, like the ability to sense color or the ability to recognize faces, can be selectively lost following localized damage to the cortex.

Recent physiological studies, including some by Livingstone and Hubel, suggest that visual signals from the retina branch into three separate processing systems in the cortex, each responsive to a specific set of visual information. One system appears to process information about form; another, about color; and the third, about movement, location and spatial organization.

Livingstone believes that many visual illusions occur because, at least near the beginning of the visual process, very large amounts of information are funneled through very few independent processing systems. This means that any one variable must be handled in conjunction with some, and independent of other, variables. When two sets of visual information are processed through different neurological pathways, says Livingstone, it can result in some striking illusions.

Much of Livingstone's research has focused on the lateral geniculate bodies, peanut-sized neurological bundles deep in the brain, which receive input directly from the retina via the optic nerve. The geniculate bodies represent an early stage of visual processing in which there are only two physiological subdivisions—the parvocellular (small cell) and magnocellular (large cell).

"One of the most striking differences between magno and parvo geniculate neurons is their response to color," says Livingstone. "Since physiological studies had suggested that the magnocellular pathway is color blind but very sensitive to luminance (light/dark) contrast, we wanted to test as many visual functions as possible under conditions in which there were color but no luminance differences across the borders between figures and ground." Such conditions are called "equiluminance" in the psychophysical literature. Livingstone and Hubel reason that any visual ability that fails under these equiluminant conditions is probably being processed by the color-blind magnocellular geniculate division.

Livingstone explains that she and Hubel make equiluminant images from red and green patterns. Red and green are complementary colors, but nearly equal on the scale from light to dark.

The investigators first set out to repeat some earlier experiments done by others on the perception of move-

ment. On an oscilloscope screen they generated a horizontal red/green grating that was made to move downward at a constant speed. When they varied the relative luminance of the red and green, they found that the pattern appeared to slow or stop altogether when the two colors approached equiluminance.

By placing a piece of red cellophane over one side of the screen, thereby producing a red/black (luminance-contrast) image on that side, they found that the red/black side appeared to move much faster than the red/green, equiluminant side. This happened despite the fact that the two images were actually moving at the same speed. The ability to see movement apparently depends on luminance contrast, suggesting that it is handled by the magnocellular division.

Livingstone and Hubel were not surprised that movement seemed to be processed by magnocellular neurons. Earlier physiological studies had shown that magno cells have a shorter latency than parvo cells. Apparently tuned to higher frequencies of stimulation, their responses decay more rapidly. Parvo cells had been shown to be responsive to slower, more sustained, events.

Livingstone was surprised, however, at the particular nature of the distortion of movement that occurred at equiluminance. "Even if the movement system depended solely on luminance contrast, one might not predict that the result of using equiluminant colors would be the *slowing* of the perceived movement (as opposed, say, to making the movement less vivid)," she said. "Of course, in some sense amount of movement *is* speed."

Determining which geniculate division processed information about movement turned out to be relatively easy. Defining which division handled information about form was much harder to do.

Previous research had already suggested that at least at the geniculate processing stage, human physiology does not recognize form as a single or simple category. Some aspects of form perception seem to be color blind and clearly associated only with magnocellular neurons—the ability to relate shapes over wide angles, for instance. Other properties of form, like orientation of contours, seem to be processed by both geniculate layers.

"The next stage in the perception of form," says Livingstone, "occurs in the cortex in visual area 1 (V1). Physiological animal research done by Livingstone and Hubel helped to define the three functional divisions of V1: the "blobs," the "interblobs" and "4B."

By attaching microelectrodes to each type of cell and testing its response to a variety of stimuli, they found that interblob cells were sensitive to orientation, but insensitive to color or motion. Neurons in layer 4B were selective for orientation and movement, but not color; and blob cells were highly selective for color and brightness, but not shape or movement.

Livingstone believes the explanation for at least one visual illusion lies in the inferior resolution capabilities of blob versus interblob neurons. It is commonly known that under most circumstances a single color will make the colors around it appear more like its own complementary or opposite color.

Human physiology does not recognize form as a single or simple category.

But if that same color is the ground onto which a fine pattern of another color is placed, the opposite effect may occur and the two colors may appear to blend together. "If the fine pattern is blue, a red background becomes more purple;" says Livingstone, "if it is yellow, the red background becomes more orange."

The receptive field centers of blob cells are at least twice as large as field centers of interblob neurons, and they therefore receive input from a larger visual field. Livingstone points out that it is possible for a pattern to be too fine for the color-coded blob cells and not too fine for the shape-sensitive interblobs. When this happens, the colors may appear to blend, while the forms remain discrete.

What appears to be a solid pink in a typical magazine illustration, says Livingstone, is actually a multitude of tiny red dots printed onto a stark white page. If one views the pink under steadily increasing magnification, there should come a point at which the dots can be resolved even though their red color appears to bleed into the surrounding white. Such illusions occur, says Livingstone, when colors are placed so close together that opposite borders of the fine colored regions can both fall within the receptive field center of a single color-coded blob cell.

Livingstone believes blobs and interblobs may also hold the key to another common illusion—the strange and jiggly appearance of equiluminant forms (forms that contrast sharply in color, but are equal in luminance to their backgrounds). Earlier investigators had described equiluminant forms as "jazzy," "unstable," "jelly-like," "colloidal," and "hazy."

"We were at first mystified by the transience of this phenomenon," Livingstone says, "the seemingly irregular and unpredictable way in which equiluminant texts or patterns would disappear and reappear. We finally found that fixing our gaze on any one point caused the entire pattern to vanish after about a second, and that voluntarily shifting our gaze to a new point caused the display to reappear immediately."

Livingstone and Hubel found that equiluminant images tended to fade under voluntary fixation just as normal images fade when the eye is artificially stabilized. They discovered that eye movements two to four times larger than those the eye normally makes under fixation were necessary to refresh the equiluminant image.

The key to fading forms at equiluminance, they concluded, lies with the interblob cells. "Half of these cells are color blind and therefore inactive at equiluminance," Livingstone says. "The resolution capabilities of the interblob system are reduced enough at equiluminance, that the small eye movements during voluntary fixation are not enough to prevent it from adapting, and the forms seem to fade." Livingstone thinks this tendency of equiluminant images to fade during steady fixation "can go a long way toward explaining why they look so strange."

She and Hubel have since turned their attention to visual area 2 (V2), a region of the cortex adjacent to, and receiving input from, V1. How visual information is processed at even higher stages in the brain is still largely unknown, but Livingstone cites evidence that the three main functional pathways remain discrete.

"Knowledge about the segregation of functions in the visual system may be useful to artists, advertisers and designers," Livingstone concludes. "Until recently only a few aspects of perceptual psychology and aesthetics could be correlated with what was known about how the brain processes information. Now that situation is changing, and vision research is at an exciting time." □

The Dawn of Wonder

by Melvin Konner

One of the most fascinating and least discussed discoveries in the study of the wild chimpanzees was described in a short paper by Harold Bauer. He was following a well-known male chimpanzee through the forest of the Gombe Stream Reserve in Tanzania when the animal stopped beside a waterfall. It seemed possible that he had deliberately gone to the waterfall rather than passing it incidentally, but that was not absolutely clear. In any case, it was an impressive spot: a stream of water cascading down from a twenty-five-foot height, about a mile from the lake, thundering into the pool below and casting mist for sixty or seventy feet; a stunning sight to come upon in the midst of a tropical forest.

The animal seemed lost in contemplation of it. He moved slowly closer, and began to rock, while beginning to give a characteristic round of "pant-hoot" calls. He became more excited, finally beginning to run back and forth while calling, to jump, to call louder, to drum with his fists on trees, to run back again. The behavior was most reminiscent of that observed and described by Jane Goodall in groups of chimpanzees at the start of a rainstorm—the "rain dance," as it has been called. But this was one animal alone, and not surprised as the animals are by sudden rain—even if he had not deliberately sought the waterfall out, he certainly knew where it was and when he would come upon it.

He continued his activity long enough so that it seemed to merit some explanation, and did it again in the same place on other days. Other animals were observed to do it as well. They had no practical interest in the waterfall. The animals did not have to drink from the stream or cross it in that vicinity. To the extent that it might be dangerous, it could be easily avoided, and certainly did not interest every animal. But for these it was something they had to look at, return to, study, watch, become excited about: a thing of beauty, an object of curiosity, a fetish, an imagined creature, a challenge, a communication? We will never know.

But for a very similar animal, perhaps ten million years ago, in the earliest infancy of the human spirit, something in the natural world must have evoked a response like this one—a waterfall, a mountain vista, a sunset, the crater of a volcano, the edge of the sea—something that stopped it in its tracks and made it watch, and move, and watch, and move, and watch again; something that made it return to the spot, though nothing gainful could take place there, no feeding, drinking, reproducing, sleeping, fighting, fleeing, nothing *animal*. In just such a response, in just such a moment, in just such an animal, we may, I think, be permitted to guess, occurred the dawn of awe, of sacred attentiveness, of wonder.

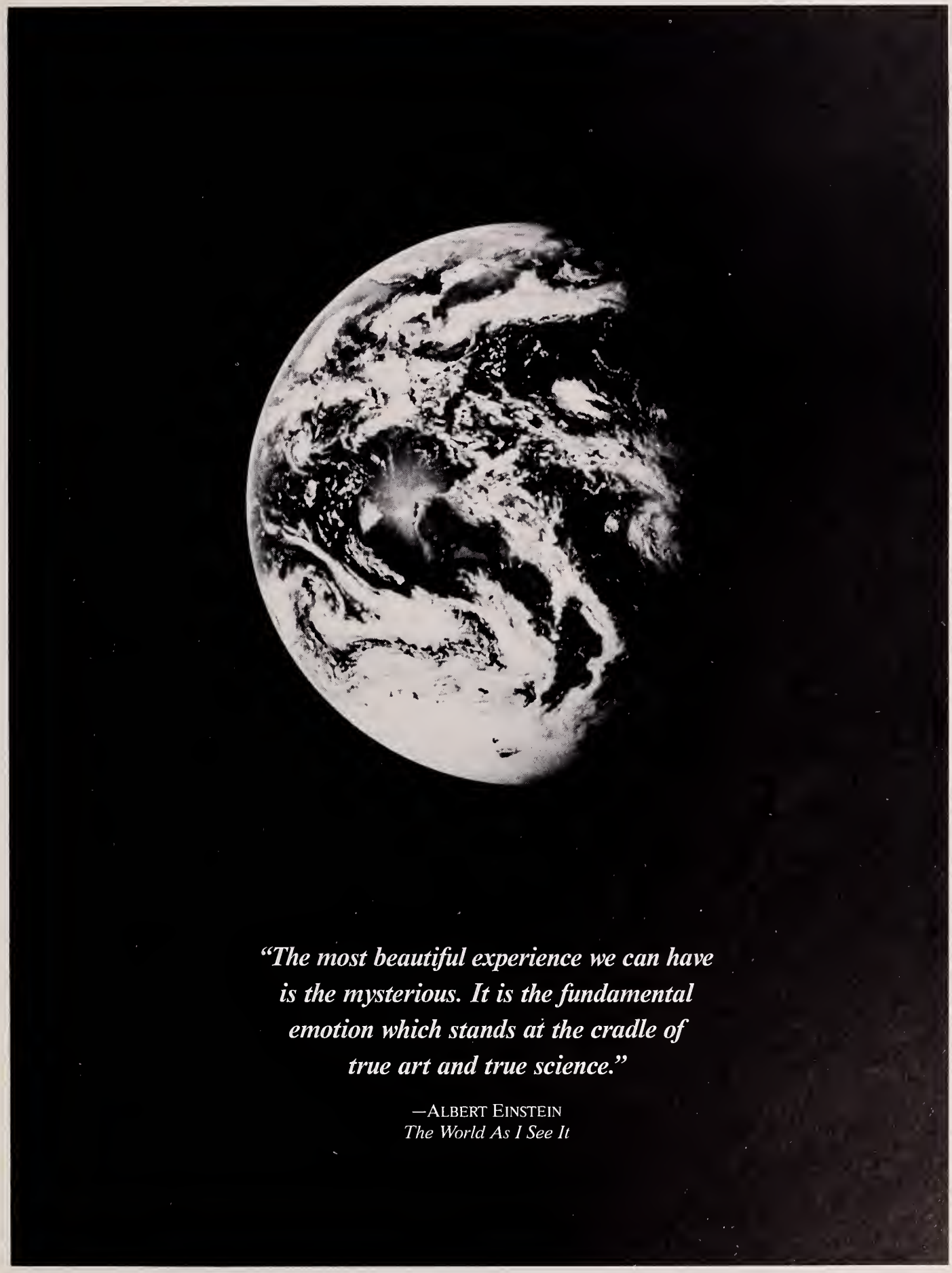
The human infant, for its first few months of life, is all eyes, in a way that no other animal infant quite is. It isn't just that its eyes are good, that it does a lot of looking; it's that it does so little else, really. It can suck, of course, and swallow, but the rest of what it does is very primitive, except for the functions of attentiveness. Even in the adult brain, one-third of all incoming signals come through the eyes. In the infant, looking and seeing are way ahead of most other functions in development, with the possible exception of listening and hearing. The infant is not a passive figure, nor an active one either, but what might be called an actively receptive one—eagerly, hungrily receptive, famished for sights and sounds, no vague, fuzzy intelligence in a blooming, buzzing confusion, but a highly ordered, if simple, mind with a fine sense of novelty, of pattern, even of beauty. The light on a leaf outside the window, the splash of red on a woman's dress, the shadow on the ceiling, the sound of rain—any of these may evoke a rapt attention not, perhaps, unlike that of the chimpanzee at the waterfall.

For most people, as they grow, that sense of wonder diminishes in frequency, becoming at best peripheral to the business of everyday life. For some, it becomes the central fact of existence. These follow two separate paths: Either the sense of wonder leads them down an analytic path, or it leads them to simple contemplation. Either way the sense of wonder is the first fact of life, but the paths are completely different in every other way. The analyst, or scientist, moved to reveal by explaining, breaks apart the image, and the sense of wonder, focusing sequentially on the pieces. The contemplator, or artist, moved to reveal by simply looking, keeps the image and the sense of wonder whole. The artist contrives to keep the attention riveted without fragmentation, by means of high trickery. This trickery involves transmuting the image into human speech—whether a literary, plastic, or musical form of speech—thus fixing in place forever the sense of wonder.

There is a photograph that has by now been seen by most people living in civilized countries. It was taken from an ingenious if crude vehicle traveling many thousands of miles per hour, across a vast expanse of space empty of air, by men who had devoted their lives, courageously and at great personal cost, to the mastery of nature through machinery. This photograph cost perhaps a billion dollars, and in one sense it is worth every penny.

It shows an almost spherical object poised against a backdrop of black. The object is partly colored a deep, warm, pretty blue, with many broken, off-white swirls drawn across it. It looks at first like a mandala, a strange symbol woven on black cloth. It looks whole, somehow, and rather small. But as we study it (it draws us in almost mysteriously), some red-brown shapes obscured among the swirls of white take on before our eyes the unmistakable images we first saw and memorized as children encountering the geography of the continents. If the space program accomplished nothing else (and I am often at pains to discern what it did accomplish), we must be grateful to it for producing that photograph.

"Got the earth right out our front window," said Buzz Aldrin. A medium-sized mammal from a middling planet of a middle-aged star in the arm of an average galaxy, gazing at home. There was no excess of poetry on that mission. There was, of course, the stark poetry of aeronautics gobbledygook and



"The most beautiful experience we can have is the mysterious. It is the fundamental emotion which stands at the cradle of true art and true science."

—ALBERT EINSTEIN
The World As I See It

PHOTO COURTESY OF NASA

the arch, well-prepared, historic *mot* of Neil Armstrong setting foot on the Sea of Tranquillity, but "Beautiful, beautiful," "Magnificent sight out here," and "Got the earth right out our front window," was about the level at which these unique first views of the natural world were transmuted to human speech. This was no fault of Armstrong or Aldrin; they were chosen for other talents, which they had in full measure. But it is intriguing that such spontaneous poetry as there was was evoked by the machinery. "The Eagle has wings," one of them said as the lunar landing vehicle separated, after some difficulty, from the orbiting command station. *The eagle*, bold symbol of human hope on the North American continent and, beyond that, of the hope of humanity in the mission, *has wings*, has the means to transcend technical difficulty and to emerge, having mastered natural law.

But this stepping off the earth is an illusion. The mastery of natural law has proceeded no further than the grasp of some elementary laws of physics. Compared with the uncharted, infinitely more intricate laws of biology and behavior that govern the human spirit, this mastery is trivial, a mere conjurer's trick. The mastery of physical law can no longer save us while we are grounded in a tangle of ignorance of the natural laws that govern our behavior. In this sense, the eagle does not have wings.

When I was a young man in college, a professor took me to the American Museum of Natural History, not to the exhibits, which I had often seen, but into the bowels of the place, among the labyrinths of storage cabinets of bones and skins and rocks and impossibly ancient fossils. I was very much impressed by this chance to see the museum the way insiders, professionals, saw it.

There I met a man who had devoted most of his life to the study of the skeletal remains of archaeopteryx—the earliest tetrapod with feathered wings—embedded in a Mesozoic rock. I was introduced to him, awed by him, impressed with his intelligence and wisdom. It was obvious that he wanted to impart to me some piece of genuine, useful knowledge gained from the countless hours of squinting over that crushed tangle of bone and rock.

What he finally said was that he thought archaeopteryx was very much like people. This of course puzzled me, as it was calculated to do, and when I pressed him to explain, he said, "Well, you know, it's such a transitional creature. It's a piss-poor reptile, and it's not very much of a bird." Apart from the shock of hearing strong language in those relatively hallowed halls, there was an intellectual shock to my young mind that fixed those phrases in it permanently.

I suspect that the human spirit is insufficiently developed at this moment in evolution, much like the wing of archaeopteryx.

The dinosaurs ruled this planet for over a hundred million years, at least a hundred times longer than the brief, awkward tenure of human creatures, and they are gone almost without a trace, leaving nothing but crushed bone as a memento. We can do the same more easily and, in an ecological sense, we would be missed even less. What's the difference? seems an inevitable question, and the best answer I can think of is that we *know*, we are capable of seeing what is happening. We are the only creatures that understand evolution, that, conceivably, can alter its very course. It would be too base of us to simply relinquish this possibility through pride, or ignorance, or laziness.

It seems to me we are losing the sense of wonder, the hallmark of our species and the central feature of the human spirit. Perhaps this is due to the depredations of science and technology against the arts and the humanities, but I doubt it—although this is certainly something to be concerned about. I suspect it is simply that the human spirit is insufficiently developed at this moment in evolution, much like the wing of archaeopteryx. Whether we can free it for further development will depend, I think, on the full reinstatement of the sense of wonder. It must be reinstated in relation not only to the natural world but to the human world as well. At the conclusion of all our studies we must try once again to experience the human soul as soul, and not just as a buzz of bioelectricity; the human will as will, and not just a surge of hormones; the human heart not as a fibrous, sticky pump, but as the metaphoric organ of understanding. We need not believe in them as metaphysical entities—they are as real as the flesh and blood they are made of. But we must believe in them as entities; not as analyzed fragments, but as wholes made real by our contemplation of them, by the words we use to talk of them, by the way we have transmuted them to speech. We must stand in awe of them as unassailable, even though they are dissected before our eyes.

As for the natural world, we must try to restore wonder there too. We could start with that photograph of the earth. It may be our last chance. Even now it is being used in geography lessons, taken for granted by small children. We are the first generation to have seen it, the last generation not to take it for granted. Will we remember what it meant to us? How fine the earth looked, dangled in space? How pretty against the endless black? How round? How very breakable? How small? It is up to us to try to experience a sense of wonder about it that will save it before it is too late. If we cannot, we may do the final damage in our lifetimes. If we can, we may change the course of history and, consequently, the course of evolution, setting the human lineage firmly on a path toward a new evolutionary plateau.

We must choose, and choose soon, either for or against the further evolution of the human spirit. It is for us, in the generation that turns the corner of the millennium, to apply whatever knowledge we have, in all humility but with all due speed, and to try to learn more as quickly as possible. It is for us, much more than for any previous generation, to become serious about the human future, and to make choices that will be weighed not in a decade or a century but in the balances of geological time. It is for us, with all our stumbling, and in the midst of our dreadful confusion, to try to disengage the tangled wing. □

Melvin Konner '84 is Samuel Candler Dobbs Professor of Anthropology at Emory University in Atlanta, Georgia, and associate professor of psychiatry at their medical school. He was nominated for the American Book Award for The Tangled Wing. *A regular contributor to the column "Body and Mind" in the* New York Times Magazine, *Konner's most recent book is* On Becoming a Doctor *(1987).*

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One Man's Mystery

"One man's mystery is too profound to be communicated to another man. And nowhere is this more true than with the universal experience of human illness," wrote Edmund D. Pellegrino, MD, in his introduction to *Remember Me*, 1987, a collection of poems by Albert D. Anderson '52.

Anderson lives with syringomyelia, a progressively debilitating disease of the nervous system. Hostage to all who tend his needs, to balky elevators, inclement weather and night fears, his mind and spirit nevertheless remain whole. Through his poetry is felt a little of the isolation, humiliation and vulnerability this disease has wrought.

Anderson's poetry was first published in the *Bulletin of the New York Academy of Medicine* in 1983. Since then it has appeared also in a number of other medical journals. "My earlier poems arose from my reality, my coexistence with the disease," he says. "Of late, I've started to write about the world around me, my relations with others, even about religion." The selections below represent a range of his work. Three are from *Remember Me*; "Stairs" and "Visitation" appear here for the first time in print.

THE CAT

At times I wonder whether I belong
In this madhouse called home.
Then my eye falls upon the cat.

She moves with such fluidity,
Licks her paw,
Scratches herself with such aplomb,
Occasionally flicks her ear.
The creature is in business for herself.

She soothes me.
She comforts me.
I belong.

AN OLD LION

In the winter of her life
She shakes her snow-capped mane,
Tossing social workers, doctors,
 nurses, aides. . .
They'll not encage her
In a nursing home or with piles of
 medications.

She stands firm in her old house,
Drafty halls, stained-glass windows,
Her possessions scattered about.
Damn them all.

STAIRS

Stairs
Instantly say I am unwanted,
Stairs
Something is happening above.
Party or lecture, "I can't have"
A table laden with foods
Or a great hall rowed with chairs,
Stairs
Would destroy my plans, my dreams.
Were this to come to pass,
I would die.
Stairs.

THE PRESIDENT'S ROOM

The room: dark.
Light splashes through the doorway,
Laughter down the hall.
A cardiac monitor screeches.
My ventilator clicks every thirty seconds.
Darkness: I fear.

Annie.

VISITATION

My Lord, She visits me every night,
Stands by my bed, croons me to sleep.

She drops Her robes in a dark heap
about Her ankles.

Her black, glistening skin reflects
 the light from my
 single lamp.

You know that God is Black,
 a Puerto Rican woman.
She breathes the breath of life upon
 humanity.

The Christ stands by His Mother
Understanding none of Her Spanish
 sing-song lullaby.
His black curls fall about His shoulders
 as He looks up wonderingly at
 His Mother.

I alone can see or hear my splendid Lord
 as She puts me to sleep,
Pleasing me to look upon Her glorious
 ebony body.
Touch me Lord, clasp me to Your
 warm bosom,
It is young morning, daylight comes soon.
Let me sleep.

notes

by Lewis Thomas

There are no precise rules about punctuation (Fowler lays out some general advice (as best he can under the complex circumstances of English prose (he points out, for example, that we possess only four stops (the comma, the semicolon, the colon and the period (the question mark and exclamation point are not, strictly speaking, stops; they are indicators of tone (oddly enough, the Greeks employed the semicolon for their question mark (it produces a strange sensation to read a Greek sentence which is a straightforward question: Why weepest thou; (instead of Why weepest thou? (and, of course, there are parentheses (which are surely a kind of punctuation making this whole matter much more complicated by having to count up the left-handed parentheses in order to be sure of closing with the right number (but if the parentheses were left out, with nothing to work with but the stops, we would have considerably more flexibility in the deploying of layers of meaning than if we tried to separate all the clauses by physical barriers (and in the latter case, while we might have more precision and exactitude for our meaning, we would lose the essential flavor of language, which is its wonderful ambiguity))))))))))).

The commas are the most useful and usable of all the stops. It is highly important to put them in place as you go along. If you try to come back after doing a paragraph and stick them in the various spots that tempt you you will discover that they tend to swarm like minnows into all sorts of crevices whose existence you hadn't realized and before you know it the whole long sentence becomes immobilized and lashed up squirming in commas. Better to use them sparingly, and with affection, precisely when the need for each one arises, nicely, by itself.

I have grown fond of semicolons in recent years. The semicolon tells you that there is still some question about the preceding full sentence; something needs to be added; it reminds you sometimes of the Greek usage. It is almost always a greater pleasure to come across a semicolon than a period. The period tells you that that is that; if you didn't get all the meaning you wanted or expected, anyway you got all the writer intended to parcel out and now you have to move along. But with a semicolon there you get a pleasant little feeling of expectancy; there is more to come; read on; it will get clearer.

Colons are a lot less attractive, for several reasons: firstly, they give you the feeling of being rather ordered around, or at least having your nose pointed in a direction you might not be inclined to take if left to yourself, and, secondly, you suspect you're in for one of those sentences that will be labeling the points to be made: firstly, secondly and so forth, with the implication that you haven't sense enough to keep track of a sequence of notions without having them numbered. Also, many writers use this system loosely and incompletely, starting out with number one and number two as though counting off on their fingers but then going on and on without the succession of labels you've been led to expect, leaving you floundering about searching for the ninethly or seventeenthly that ought to be there but isn't.

Exclamation points are the most irritating of all. Look! they say, look at what I just said! How amazing is my thought! It is like being forced to watch someone else's small child jumping up and down crazily in the center of the living room shouting to attract atten-

ILLUSTRATION BY PATRICK BLACKWELL

on p



tion. If a sentence really has something of importance to say, something quite remarkable, it doesn't need a mark to point it out. And if it is really, after all, a banal sentence needing more zing, the exclamation point simply emphasizes its banality!

Quotation marks should be used honestly and sparingly, when there is a genuine quotation at hand, and it is necessary to be very rigorous about the words enclosed by the marks. If something is to be quoted, the *exact* words must be used. If part of it must be left out because of space limitations, it is good manners to insert three dots to indicate the omission, but it is unethical to do this if it means connecting two thoughts which the original author did not intend to have tied together. Above all, quotation marks should not be used for ideas that you'd like to disown, things in the air so to speak. Nor should they be put in place around clichés; if you want to use a cliché you must take full responsibility for it yourself and not try to fob it off on anon., or on society. The most objectionable misuse of quotation marks, but one which illustrates the dangers of misuse in ordinary prose, is seen in advertising, especially in advertisements for small restaurants, for example "just around the corner," or "a good place to eat." No single, identifiable, citable person ever really said, for the record, "just around the corner," much less "a good place to eat," least likely of all for restaurants of the type that use this type of prose.

The dash is a handy device, informal and essentially playful, telling you that you're about to take off on a different tack but still in some way connected with the present course—only you have to remember that the dash is there, and either put a second dash at the end of the notion to let the reader know that he's back on course, or else end the sentence, as here, with a period.

The greatest danger in punctuation is for poetry. Here it is necessary to be as economical and parsimonious with commas and periods as with the words themselves, and any marks that seem to carry their own subtle meanings, like dashes and little rows of periods, even semicolons and question marks, should be left out altogether rather than inserted to clog up the thing with ambiguity. A single exclamation point in a poem, no matter what else the poem has to say, is enough to destroy the whole work.

The things I like best in T. S. Eliot's poetry, especially in the *Four Quartets*, are the semicolons. You cannot hear them, but they are there, laying out the connections between the images and the ideas. Sometimes you get a glimpse of a semicolon coming, a few lines farther on, and it is like climbing a steep path through woods and seeing a wooden bench just at a bend in the road ahead, a place where you can expect to sit for a moment, catching your breath.

Commas can't do this sort of thing; they can only tell you how the different parts of a complicated thought are to be fitted together, but you can't sit, not even take a breath, just because of a comma. □

Lewis Thomas '37, chancellor of Memorial Sloan-Kettering Cancer Center in New York, is author of two other books: Lives of a Cell, *winner of the 1974 National Book Award, and* The Youngest Science *(1983).*

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unctuation



American Beauty

A Short Story by Ethan Canin

When my brother Lawrence left us to live in California I should have tried to stop him, but I didn't, and I should have been sad, but I wasn't. Instead it was just something happening in our lives. It was like the roof leaking or the electricity going out. I thought of him riding the Trailways bus across the western states, underneath the bubble skylight, sharing cigarettes in station diners, talking with girls he didn't know. I thought of his new life in the Electronics Belt. I imagined going out to see him in a couple of years, heading out to California to stay with him in a split-level ranch with a dark-bottom pool. He was twenty-seven and I was sixteen and computers were booming.

On the morning he left, my mother gave him a Bible. I gave him a watch with a built-in compass, and our sister, Darienne, who was nineteen, gave him a four-by-six-foot oil portrait of our family, framed.

"I'm going to have to take it out of the frame," Lawrence said.

"But it's of our family."

"Dary, I'm taking a bus." Lawrence looked at me.

"Dary," I said, "he'll break down the frame and roll up the canvas. It's done all the time."

"I worked six weeks on it," she said. She started to cry.

"Don't worry," I said. "He'll be back soon."

Lawrence held up the painting. In it we were sitting together in our kitchen—my brother, my sister, my mother, our spaniel named Caramel, and I. Lawrence's wrist dipped below the back of Darienne's collarbone so that his bad hand was hidden around her shoulder.

My father was in the painting also, or at least Darienne's idea of him. He had left fourteen years ago, and not even Lawrence remembered much about him. We certainly never talked about him anymore. But Darienne still put him into her paintings. In them he had a hooked nose, a straight nose, the faintly Indian nose and angled cheekbones that I think he really did have; he had thinning hair, full hair; he stared out from the canvases, scowled out, held his head turned away from us. He had been a civil engineer. He had stolen some money from his company and left with a woman who was one of my mother's good friends. One of the few times my mother spoke of him after that, years later, she told me that he was looking for something he would never find. In the painting Darienne now gave

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ILLUSTRATION BY MARTHA HUNTINGTON

Lawrence he stood behind my mother. His arm rested on Darienne's shoulder, and he was smiling. He almost never smiled in Darienne's paintings.

"He's smiling," I said.

"He knows Lawrence is going to stay."

"I'm not staying, Dary."

"He's not staying," I said.

"He knows he's coming back soon, then," she said.

Lawrence was leaving because things had reached a point for him here. Although my mother said the good Lord subtracted five years from his age, the five years he spent fighting in blacktop lots and driving a car with no hood over the engine, twenty-seven was still old for him to be living where he was, in the basement of our house. He had an engineering degree from Hill Oak College and a night certificate in computer programming. His job, teaching math and auto mechanics at the high school, had ended in June, and on top of that my sister was having a bad summer. In July she had shown me a little black capsule inside the case where she kept her oboe reeds. We were alone in her room.

"Do you know what it is?"

"Cold medicine," I answered.

"Nope," she said. She put it on her tongue and closed her mouth. "It's cyanide."

"No, it's not."

"It is so."

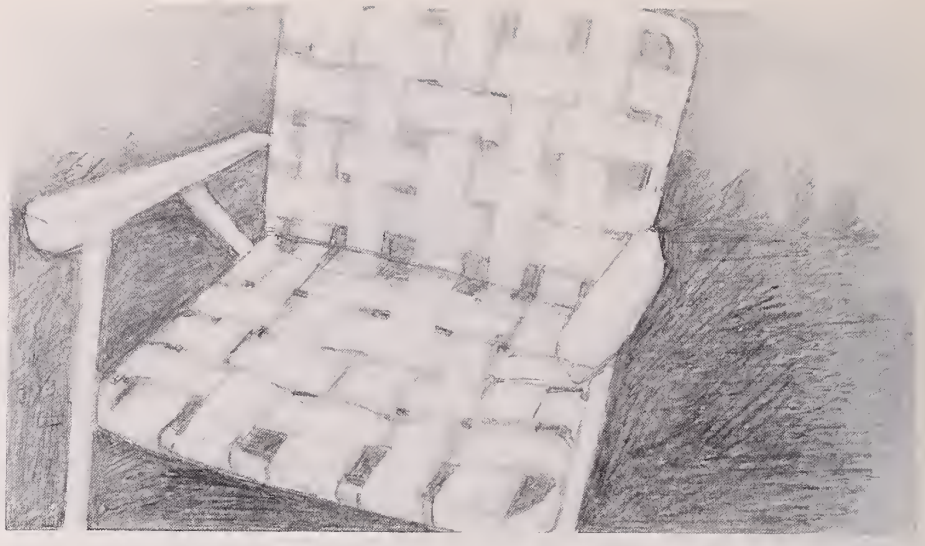
"Dary, take that out of your mouth." I put my hand on her jaw, tried to get my finger between her lips.

"I'm not Caramel."

"Caramel wouldn't eat cyanide." I could feel the tips of her incisors nibbling my fingers. Finally I got my hand into her mouth.

"It's not cyanide," she said. "And get your hands out of my mouth." I pulled the pill out and held it on my palm. Saliva was on my fingers.

"You're crazy," I said to her. Then I regretted it. I wasn't supposed to say that to her. My mother had taken me aside a few years before and told me that even though my sister and I had lived together all our lives, I might still never understand her. "It's difficult for her to be around all you men," my mother said to me. "You and Lawrence are together somehow, and that's a lot for your sister." Then she told me never to call Darienne crazy. She said this was important, something I should never forget. I was thirteen or fourteen years old. "Whatever you do," she said, tilting her head forward and looking into my eyes, "whatever happens, I want you to remember that."



At the beginning of the summer, before I knew he was leaving, Lawrence said he had something very important to tell me. "But I'm not just going to tell you," he said. "I'll mix it into the conversation. I'll say it some time over the summer." We were working on my motorcycle, which he had given me. "You have to figure out what it is," he said. He had drilled the rusted bolts on the cam covers and we were pulling them out. "It's about time you started doing that anyway."

"Doing what?"

"Thinking about what's important."

We were living in Point Bluff, Iowa, in the two-story, back-porched saltbox my father had bought before he left us. As we took apart the rusting cams I tried to decide what was important in our lives. Nothing had changed since I could remember. Lawrence still lived in the basement, where at night the green light of his computer filled the window. Darienne was using the summer to paint still lifes and practice the Bellini oboe concerto, and I was going to go to baseball day camp in August. My mother sipped vodka cranberries out on the lawn furniture with Mrs. Silver in the evenings, and at night sat on the porch reading the newspaper or sometimes the Bible and watching the *Tonight* show. She was the high school guidance counselor and she believed the Lord had a soft spot for the dropouts and delinquents she had to talk with every day. Mrs. Silver was her best friend. Mrs. Silver was young, maybe ten years younger than my mother, and read the Bible, too, although she liked the newspaper more. My mother said she's led a rough life. She didn't look that way to me, though. To me, my mother looked more like the one with the rough life. Sometimes she wore a bathrobe all weekend, for example. I didn't know any other mothers who did that. And except for the two or three times a week when she cooked, Lawrence and Darienne and I made our own dinners. My mother's arms were pale and her elbows were red. Mrs. Silver's were tan. Mrs. Silver wore three or four bracelets, a gold chain on her ankle, and blouses without sleeves. She came over almost every day. I talked to her sometimes in the back yard when my mother went inside to answer the phone or mix another pitcher of vodka cranberry. Mostly we talked about my future.

"It's not too early to think about college," she told me.

"I know, Mrs. Silver."

"And you ought to be saving money." She put her hands on her hips. "Are you saving money?"

"No."

"Do you know that life can be cruel?" she asked.

"Yes."

"No you don't," she said. She laughed. "You don't really know that."

"Maybe I don't."

"Are you learning, at least?"

"Yes," I answered. "I'm trying to decide what's important." I nodded. "Right now I'm learning about motorcycles."

Lawrence and I were taking apart the Honda CB 360 he had given me. We planned to have it completely rebuilt before baseball camp. He had given it to me in March, when the weather warmed and the melting snow uncovered it in the ditch by Route 80. It was green. The front fork had been bent double from impact, and when I touched the rusted chain it crumbled in my hands.

The first thing we took apart was the clutch. We loosened the striker panel and let the smooth round plates, bathed in oil, spill one by one into an aluminum turkey-roasting pan. With the oil

wiped clean, they gleamed like a metal I had never seen before, the way I imagined platinum gleamed. They were polished from their own movement. Lawrence explained that the slotted panels were to dissipate heat from friction. After we took the plates out and examined them, noted how they slipped smoothly over their fellows, we put them back in. "That's how you learn a machine," he said. "You take it apart and then you put it back together."

I thought about this for a moment. "Is that what you were going to tell me?"

"No, Edgar," he said. "That's not important enough."

That spring, before he gave me the motorcycle, he had taught me his theory of machinery. In April he took me out to the back yard, to a patch of the softening earth that he had cleared of the elephant grass that grew everywhere else on the lot. He had sunk four poles there and made a shanty with fluted aluminum, sloping the ground so that snowmelt poured into two gulleys and flowed away from the center, where his machinery lay. His machinery was anything he could get his hands on. He got it from junkyards and road gulleys and farm sales. He made sealed bids on government surplus, brought home sump pumps, rifle mechanisms, an airplane engine, hauled them in a borrowed truck and set them underneath the shanty to be taken apart.

"Every machine is the same, Edgar," he told me one evening. "If you can understand two sticks hitting together, you can understand the engine of an airplane." We were standing underneath the shanty with Darienne and Mrs. Silver, who had wandered out to the back yard after dinner. Out there Lawrence kept a boulder and a block of wood and a walking stick to demonstrate the lever. "I can move the boulder with the stick," he said that evening, and then he did it. He wedged the stick between the wood and the rock, and when he leaned on it the boulder rolled over. "Fulcrum—lever—machine," he said. "Now"—and then he took the oilcloth tarp off the drag-racer engine and the Cessna propellor—"this is the very same thing."

"Spare me," said Darienne.

"If you don't want to learn," said Lawrence, "don't come out here."

Then my sister walked back across the yard, stopping to pick up a cottonweed pod for one of her still lifes. Lawrence watched her go in through the screen door. "She's crazy," he said.

I turned to him. "It's hard for her to be around all us men."

Mrs. Silver looked at me. "Good, Edgar," she said.

I smiled.

My brother picked up a wrench. He cleared his throat. "That's peckerdust," he said.

"Pardon me," said Mrs. Silver.

"I said that's peckerdust. Darienne can take what I give her. People like it when you're hard on them." He looked at her. "Everybody knows that. And you know what?" He transferred the wrench to his bad hand and pushed back his hair. "They come back for more."

"A lady wouldn't come back for more," said Mrs. Silver. She put her hands together in front of her. "And a gentleman wouldn't say that."

Lawrence laughed. "Well, Dary sure likes it. And she comes back."

"It's a nice night out here," I said.

Mrs. Silver smiled at me. "It is," she said. Then she turned and walked back to the house. The kitchen light went on. I saw Darienne at the sink putting water on her face. I watched her wipe the water from her eyes with a paper towel and then move away from the window.

Sometimes I tried to look at my sister as if she were a stranger. We spent a lot of time in the house together, she and my mother and I, and I had a lot of time to look at her. She was tall, with half-curly, half-straight hair and big shoulders. Sometimes Mrs. Silver sat with us. Mrs. Silver was lonely, my mother said. She had a husband who drank. She was beautiful, though. "I'm your mother's charity case," she would say, sitting in our yard chair while she and my mother waxed each other's legs. "Your mother just feels sorry for me." Sometimes I compared her with my sister. I watched her in the yard or on the other side of the family room as she smiled and laughed, as she brushed her bangs from her forehead or drank a vodka cranberry from a straw. Then I looked at Darienne. While she painted or played oboe, as if I were seeing her for the first time at a dance, I watched her. Her hands moved. She had the potential to be pretty but she wasn't. This is what I decided. Not the way she was now, at least. Her face was friendly, but she wore boy's cotton shirts and slumped her shoulders. In her shirt pocket she kept oboe reeds, which she always sucked.

"You ought to stand up straight," Lawrence told her.

"So I can be prettier for you? I'd rather die."

"No you wouldn't," said my mother.

"And you shouldn't suck those things in public," said Lawrence.

Darienne closed her lips tight. Whenever Lawrence corrected her, she pursed them so that they turned almost white. I thought this had something to do with her epilepsy, which she'd had since childhood, but I wasn't sure. She had been a special needs student in high school. Although we were never allowed to see her report card, I think she flunked most subjects. It wasn't because she was unintelligent, my mother said to Lawrence and me, but because there was a different force driving her. She painted beautifully, for example—"like a professional," said my mother—and played second oboe in school orchestra. But something about the epilepsy, I guess, made her slow. My mother parceled out her medicine in small plastic bottles that Darienne kept on her dresser. She never had any fits—she only had the *petit mal* disease—but she slept with cloth animals in her bed at age nineteen and used a Bambi nightlight. It was small and plastic and shaped like a deer.

Although Lawrence never paid much attention to her, Darienne still liked to show him everything she made and everything she found. At the end of most days she went downstairs to the basement with sheets of her sketch paper in her hand. She stayed in his apartment for a few minutes, then came back up.

"Why do you just draw lines?" I said to her one afternoon when she came upstairs.

"I don't. I draw plenty of things."

"I've seen you just drawing lines." I grabbed her hand. "Let me see."

"Edgar, you don't care what I draw."

"I *don't* care," I said. "You're right. I just want to see."

Really, though, I did care. I wasn't sure whether I cared about her because she was my sister, or just because there was something wrong with her, but I did care. She didn't think I did, though. For my birthday that year she had given me a diary, and inside, on the flyleaf, she had written in ornate calligraphy: I DON'T THINK YOU CARE ABOUT ANYTHING. And below that, in small letters: (BUT IF YOU DO, WRITE IT IN HERE). Underneath that, she had made a sketch of the sculpture *The Thinker*. It was a good sketch, and in parentheses even lower on the page, in even smaller writing, she wrote, AUGUST RODIN.

Darienne was a good artist. In the mornings she did drawing exercises. She sat in the window bay of her bedroom, our yard and the drainage canal curving below her, the hills with their elephant grass and vanilla pines in the distance, and she drew lines. She wouldn't show me, but I saw them anyway when

I was in her room. They were curved, straight, varied in thickness, drawn with the flat edge or the sharp point of the pencil.

"That's a nice one, Dary," I said one morning as I passed behind her while she was drawing at the window. "Where did you get the idea for that one?"

That afternoon she came out to the yard where Lawrence and I were pulling out tiny screws and springs from the motorcycle carburetor. "You know, Edgar," she said, "all great artists practice their lines."

"Actors practice their lines," I said.

Lawrence laughed.

She pressed her lips together. "*You* know what I mean," she said. She walked around until her shadow fell on the carburetor. Then she stood there. "Maybe now," she said, "you two want to go out and shoot some animals."

"You're weird, Dary," said Lawrence.

"I'm not weird. You guys are weird." She threw a dirt clod in our oil pan. "Not everyone feels the same forces."

"You going to clean that dirt out?" said Lawrence.

"Why? So you can spend eight more hours taking out a cylinder?"

"We're working on the carburetor," I said.

"It looks like Lawrence is doing everything."

I loosened a small mixture screw. "If I practiced the oboe as much as you," I said, "I'd be Doc Severinsen."

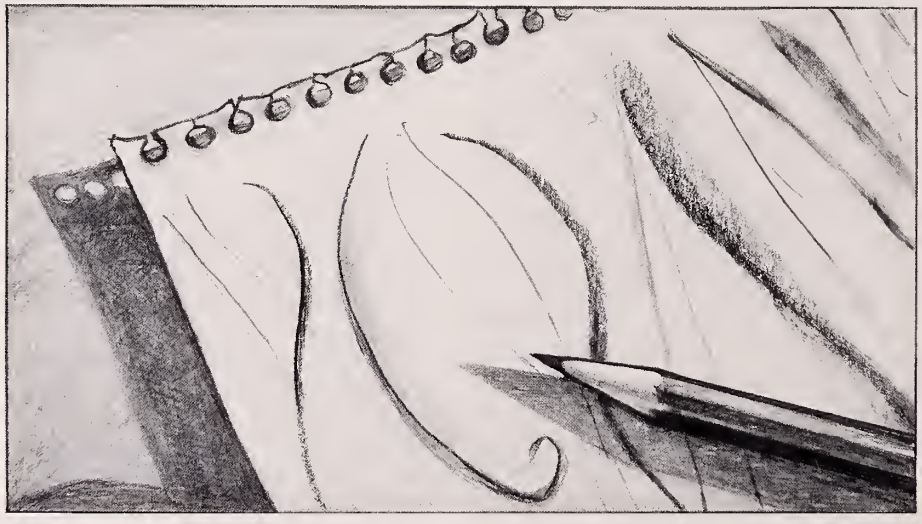
She worked her lips. "Doc Severinsen plays the trumpet."

"He plays the oboe, too." I looked at Lawrence. I had made this up.

"The oboe is a double reed," Dary said. "It's one of the most difficult instruments."

The truth was, she was right. I had heard that the oboe was a fairly difficult instrument, and Darienne was pretty good on it. She could have played first oboe in school orchestra, but she played second because Mr. MacFarquhar, the director, didn't want her to have the responsibility. I felt bad saying the things I said to her. But she brought them on herself. I would have had conversations with her, but they never worked out.

"I hope the dirt clogs your engine," she said.



Lawrence made up a game that year that Darienne hated and that we played on all our car trips. It was called What Are You Going to Do? Lawrence drove and led the game. "You are driving along the summit pass of a mountain," Lawrence said one evening as he drove, "when under your foot you notice that the accelerator has become jammed in the full open position. You are approaching dangerous curves and the car is accelerating rapidly." He rolled down his window, propped his elbow out, adjusted the mirror to give us time to think. My mother shifted in her seat. "What are you going to do?" he asked.

"Press the brakes," said my mother.

"You'll burn them out." He adjusted his headrest.

"Steer like hell," said Mrs. Silver. Lawrence smiled.

"Open the door and roll out onto the road," said Darienne.

"You'll kill other drivers and possibly yourself." He put the blinker on and passed another car. "Edgar?"

"Shift the transmission into neutral," I answered.

"Bingo," he said. He leaned back and began whistling.

In high school, Lawrence had been in one piece of trouble after the next. He had broken windows and stolen cars and hit someone once, or so one of my teachers later told me, with a baseball bat. I knew about a lot of it because the school faculty told me. "You're Lawrence's brother," the older ones always said to me, more than a decade later, at the start of a new school year. Then they told the story about him stealing all the school's lawnmowers or driving a car into the Missisippi River. I never asked Lawrence about the bat because I couldn't imagine my brother doing that to anyone. I did ask him about some of the other things, though. He had broken into a gas station one night with his friends, poisoned a farmer's milk herd, set fifty acres of woods on fire. One night, racing, he turned too wide and drove his Chevy Malibu into the living room of a house. But he wasn't hurt. Nothing ever happened to him. He had a juvenile record and was headed, my mother said, for the other side of the green grass, when, the day he turned eighteen, like a boiling pot coming off the fire, he just stopped.

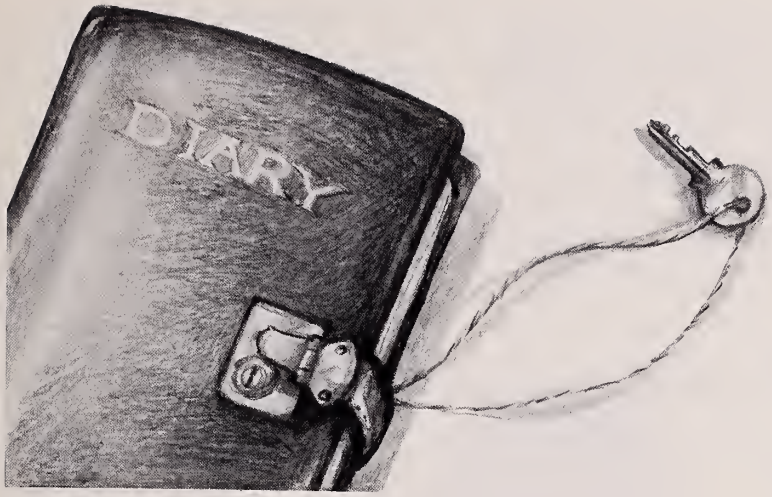
It didn't seem that anybody just changed like that, but evidently Lawrence did. This was how my mother told it. "The candle of the wicked shall be put out," she said. I was seven years old then. Lawrence was supposed to move from the house but she let him stay, and some sense just clicked on in his head. He stopped going out and his friends started calling him less, then stopped calling him completely. He cut his hair and bought a set of barbells that he lifted every evening, standing shirtless in the window of his room.

A few years later, when I was in junior high and after he had bought his computer, he began telling me to stay out of trouble. I had never gotten into any, though. I didn't want to steal cars or hit people. "It's not something I want to do," I told him.

"You will, though," he said. He looked at me. "That's for sure—you *will*. But be careful when you do." Then, to show me that he had said something serious, he put his left hand behind him. My mother had taken tranquilizers when she was pregnant with Lawrence, and now his hand had only two fingers. He always held it behind his back when he said something important. The lame fingers were wide at the knuckles and tapered at the ends, and the skin over them was shiny and waxlike. I hardly noticed it anymore. I remember my mother had once told me that Lawrence's hand was my father's legacy. She said this was how my father lived on in our lives.

I didn't understand at the time. "What do you mean?" I asked.

"It's cloven," she said.



On our family trip every June we drove for two weeks. The summer Lawrence left we started west through Nebraska and Wyoming, then south, through Utah and the Arizona desert, where we drove with wet towels hanging in the open windows. We headed west, over the Colorado River where it was wide, then back again, into canyonland, where the earth turned red and the mesas were veined with color. Darienne held a sketch pad on her knees and drew the cypress that clung to ledges in the escarpments. We turned north, into Utah, where mirages rose off the salt beds and in the distance the mountains were topped with snow. Whenever we stopped, my mother and Mrs. Silver and Darienne went on collecting trips. They came back with pieces of wood, dried seed pods, rocks with flecks of silver in them or with edges that looked polished. Darienne showed them to Lawrence. He stood at the side of the road, smoking, one hand on the open door of the car, while she went through what they had found. A rock that looked like a face, a flower that had dried to powdery maroon. He puffed on his cigarette, looked at the things she showed him. Then he got back into the car.

"The problem with our sister," he told me one day as we were drinking root beer at a gas station outside Salt Lake City, "is that she doesn't know what to do with what she knows." Darienne and Mrs. Silver and my mother were across the road sitting on a fence. Lawrence leaned over and picked a leaf from a patch of iceplant that was growing along the station lot. "Take this iceplant," he said. "Now, what would Dary say about it? That it's the color of the sea or something." He looked at me. "But what would you say about it?"

"That it's a succulent and stores water."

"That's right."

That night we drove until dawn. Darienne and my mother and Mrs. Silver slept in the back while I sat in front with Lawrence. The Great Salt Lake lay somewhere to the side of us, and I watched for it in the moonlight but could not tell it from the salt flats that extended everywhere around, gray and white and as unbroken as lake water. The mountains were gone by early morning. Then mesas appeared, and canyonland, and the road began to climb and dip. Behind us the sky was whitening. Lawrence quizzed me on the motorcycle engine. Then we were silent, the wheels clicking over the expansion fissures in the road.

He turned to me. "Knowledge is power," he said.

"I know."

"I'm going to go out and get that power." He tapped the wheel a couple of times. "I'm going out to California."

He hadn't ever mentioned leaving before. I looked over at him. "That's it," I said. "That's what you were going to tell me."

"Nope."

In fact, he had left Point Bluff once, a few years earlier. But it was only for the summer, when he went to work in Chicago. That was the only time he had ever been gone. He came home once or twice a month. One weekend when he didn't come home he had invited Darienne and me to come see him. He wrote that he would take Darienne to one of the world's great art museums and me to the Cubs game, but my mother wouldn't let us go. She said she didn't trust Chicago. "The Bible has spoken of such cities," she said. "If he wants to see you, he can come back here." He stayed away three months.

"When are you going to be back?"

"I'm going to stay out there a while," he said. "I'm getting into computers. I haven't told anybody yet, Edgar."

"Where will you go?"

"Silicon Valley," he said. "You ought to see it."

"You going to stay out there forever?"

"I'll be back."

"When?"

He sprayed the windshield three times with the automatic washer, then ran the wiper. "Edgar," he said. "You're not thinking about what's important."

I looked ahead of us. There were mobile homes scattered at the roadside. I never knew exactly what he meant when he said that. I tried to think what a twenty-seven-year-old would be thinking. "Are you meeting a girl?"

"Nope."

We drove on. Now the road was jet black in front of us, new asphalt. It was going underneath without noise. I thought about him leaving. Twenty-seven was old to be living in the basement, but I'd had the feeling now for a while that our family was different from other families. Other families we knew went to lakes in the summer. They threw wedding parties. It didn't seem that anybody in our family could ever get married. It didn't seem that anybody could leave.

"Computers are hot," I said.

"That's right."

"And you're good at them."

"I'm great at them."

"Lawrence," I said, "what's Mom going to do?"

He turned around and looked at the three of them asleep in the back. Then he looked straight ahead over the wheel again. He lowered his voice. "If I told you something, would you keep it quiet?"

I nodded.

He motioned his head toward the back seat. "I don't care what Mom does."

"What?"

He stared ahead.

"What?" I said again. I looked at him sitting next to me. He had the half-Indian nose Darienne gave my father in her paintings. Underneath it his stubble was unclipped. His skin was pocked from old acne. I tried to think, I tried to think *hard*, whether I cared about my mother. Then I looked up. "You sound like a bastard," I said.

He turned to me. "Bingo," he said. He clapped his hands together under the wheel. "That's something important. I *am* a bastard."

I picked my fingernails.

"That's not what I was going to tell

you, though." He pointed to his head. "But at least you're thinking. I'll tell you something else, though, right now."

"What is it?"

He held the wheel with his knees and put his arms behind his head. Then he glanced behind us. "I slept with Mrs. Silver," he said.

"What?"

He put his hands back on the wheel and whistled the opening of the Bellini oboe concerto. I looked behind us.

"You did not."

"I sure did. In the basement."

For some reason, although it had nothing to do with Mrs. Silver, I thought again about whether I really cared about my mother. Then I thought about whether I really cared about anybody. Then I thought about Mrs. Silver. I put my arm across the seatback. "Did you really?"

"Women are afraid of getting old," he said.

"So?"

"So, you play on that."

I tried to look behind us again without turning my neck. Mrs. Silver was asleep with her head leaning back over the seat. Her mouth was open and I saw her throat. She was married to a drunk. I knew that much. I also knew that her husband had been in prison. I paused while we passed some telephone poles. "That's what you were going to tell me, isn't it?"

"Nope."

I couldn't imagine what could be more important than that. Mrs. Silver's throat was white as bath soap, and she was in our house practically every day. When she waxed her legs they shone like my polished clutch plates. I looked at the road and tried to think of what it was like. I imagined waking up one night in my room to find her at the side of my bed, whispering. "Edgar," she would say. Her voice would be low and soft. "Edgar, I can't resist." At a party that year I had felt the breasts of a girl two grades ahead of me.

That afternoon Lawrence and I were in the gas station bathroom. We were drying our hands under the heat fan. "Lawrence," I said. I rubbed my hands together a few times. "Did *she* ask *you*?"

"Did who ask me?"

"You know," I said. The dryer stopped and I put my hands in my pockets. "Did Mrs. Silver ask *you*?"

"In a way."

"In what way?"

"In the way women ask for a thing."

"How do women ask for a thing?"

He walked out to the parking lot and I followed him. We were in the desert. The tar was soft under my shoes, and Darienne and my mother and Mrs. Silver sat on towels on the car hood. Mrs. Silver was wearing a halter top tied high over her abdomen. "They ask for a thing by making you think of it," said Lawrence.

When we got home from our trip that year I started my diary. I hadn't written anything in it before. It was leatherette, with my initials embossed, and it locked. The key was attached by a piece of yellow string. I opened it and reread the inscription. Then I turned to the first page.

JUNE 21st—

I wrote.

LAWRENCE IS LEAVING



I thought of writing about Mrs. Silver. I closed the diary and locked it, then got a paper clip from the desk. When I tried it, the paper clip opened the lock. I decided not to write about her.

Darienne knocked on the door and came in. "I have to tell you something," she said. She looked at my desk. "You're using that," she said.

"What did you have to tell me?"

"That you can't tell anybody about the cyanide." She stepped behind me. "And you can't write about it, either."

"Why not?"

"It's not even cyanide," she said. "It's a diet pill. You wrote about it, didn't you?"

"Maybe."

"Let me see."

I closed the diary and locked it. She took two oboe reeds from her shirt pocket and put them in her mouth. "You ought to wash those first," I said.

"I knew you'd already written about it."

"I have not. And what do you care if I did?"

"I don't want Lawrence to know. I want him to remember good things about me."

"What if he does know? He knows everything else about you."

"He does not."

"It doesn't matter," I said.

"It does so."

I looked at her. There was always something about her that made me angry. I didn't know what it was. She looked at me as if I were about to hit her. I turned and faced right into her eyes. "It doesn't matter," I said, "because he hates you anyway."

She stepped back and felt for the door handle, and for a moment I thought she was actually going to fall. Then she left, and I didn't see her again until that afternoon, when she came outside to the yard. Lawrence and I were patching the muffler. She stood off to the side of us, humming the Bellini concerto. Even when she hummed, she repeated parts, went over and over bars as if she were practicing. It was a warm afternoon and I didn't want anything to bother me. I was cutting squares of fiber-glass mesh to fit the rust holes in the tailpipe. Lawrence was mixing the hardener. Darienne stopped and repeated a phrase. Then she repeated it again, louder.

"Hi, Dary," I said.

"Hi, Edgar. Hi, Lawrence."

"You're crossing railroad tracks," Lawrence said.

"What?" said Darienne.

"You're crossing a set of railroad tracks," he said, "when the car you're driving stalls." He squeezed out a ribbon of fiber-glass putty onto the plastic spatula and mixed it with hardener. Darienne had stopped humming. "You look up and see that around the bend the locomotive is coming. You're right in the middle of the track and the engineer won't see you in time to stop." He picked up the mixture with a spreader and pressed it into the dent in the rear of the tailpipe. "What are you going to do?"

"Start the car," said Darienne.

"It won't start."

"Give it gas."

"It still won't start. The train is coming," he said. He looked at me.

I cut four neat corners on a square of mesh. "Get out of the car," I answered.

"Bingo," said Lawrence.

Darienne took a step toward us, reached with her leg, and kicked our parts tray upside down. "You'll never get a job with that hand," she said.

Lawrence laughed. "What did you say?"

"It's a beautiful day out here," I said.

"I said you'll never get a job with that hand of yours."

Lawrence turned around in his crouch. "Damn you," he whispered. He gathered up a couple of bolts that had rolled next to him. Then he picked up a hammer from the tool chest. So quickly that it seemed to be done by someone else, not by any of us, but by a fourth, by another person, he grabbed Darienne and threw her to the ground. She hit hard on her hip. She was alongside the motorcycle, on her side in the dirt, and he raised the hammer over her face. For a moment its shiny head was above us. My brother's arm was cocked back, stiff with anger. I watched it. I saw the hair and the sweat on his wrist. I saw the hammer's rubber handle and the red steel of its shaft. AMERICAN BEAUTY HARDWARE, it said. The words were printed on aluminum tape wrapped at the neck. There was a rose emblem, black and silver, at the top. At the height of his swing it reflected brilliant light. I didn't say anything. I stood behind them. Darienne screamed. I stepped forward and grabbed Lawrence's hand.

His arm relaxed, and while Darienne scrambled up beside him he let the hammer fall from his grip. Darienne stood. Her skirt was marked with dust and oil. She brushed her cheeks, first one, then the other. Then she turned around and ran into the house.

I turned the parts tray over and began picking up springs and bolts. "Jesus, Lawrence," I said.

"She'll get over it."

In front of me, in the pan, bits of dust floated on the oil. "But you wouldn't have hit her."

"Probably not."

"You can't hit somebody like that." I looked up at him and smiled. "Come on."

He picked up the hammer and put it back in the toolbox. "What the hell would *you* know about anything?" he said.

We brought Lawrence to the bus station the week before baseball camp started. He left Darienne's painting behind because, he said, he would be back to get it. After breakfast we hung it in the living room. Lawrence said goodbye to Caramel and we got into my mother's Dodge and drove to the station.

When the bus came I helped him on with his stuff. The driver put his duffel underneath and I carried his small suitcase, which had been our father's, into the coach for him. The bus was blue inside and smelled of smoke. It didn't have a skylight. Lawrence took a seat toward the back, next to a middle-aged woman. The driver got back in. I could see Darienne and my mother waiting at the front door. Lawrence went up the aisle and kissed my mother. I watched Darienne let him kiss her also. I got out.

When the bus started to move my mother held Darienne's arm. "When will he be back?" asked Darienne.

"He walked in all the ways of his father," said my mother.

"Dary, you're not thinking about what's important," I said.

We watched the bus go out to the highway before we got back in our car. On the ride home we stopped for ice cream cones. That evening Mrs. Silver came over and drank vodka cranberries with my mother in the back yard. I drank one too, without ice, and it made me a little drunk. Darienne stayed inside.

I sat on an aluminum chair, my hands tingling from the liquor, and thought of a time when I would barely remember my brother. He would be in California in two days. Then, for as long as I could imagine, I would be living in this house with my mother and my sister. I knew I would never finish the motorcycle. It would lie out in the yard and the rust would eventually enter the engine. But that didn't bother me. I looked at my mother. She was stirring the ice in her glass. Darienne was probably upstairs drawing one line and then another, changing the shading, changing the edge. The light was fading. It seemed to me that all of them, she and my mother and Lawrence, had suffered a wound that had somehow skipped over me. I drank more of my vodka cranberry. Life seemed okay to me. It seemed okay even now, the day my brother left. It even seemed pleasant, which was the way, despite everything she said, I thought it probably seemed to Mrs. Silver.

I looked at her. She was leaning back on a lounger, reading the newspaper. She didn't seem upset about Lawrence leaving. But that's what I would have expected. She wasn't like my mother, and she wasn't like Darienne or Lawrence. Life just flowed over her. It melted over her like wax. I wondered if *she* cared about anybody. She looked up at me then, as I sat watching her, and I saw that her mouth was rimmed with cranberry.

I smiled. She smiled back. I stood up and went into the house, and after I looked at our new painting for a while I walked upstairs to see my sister. When I came into her room the lights were off except for the Bambi nightlight. It lit the baseboard. In its small, yellow glow I could see Darienne on the bed. Her white legs were drawn up against her chest and she was crying. I went over and sat next to her.

"Hi, Dary."

She didn't say anything. We sat there for a while. She rocked up and back against the wall.

"You shouldn't be so sad," I said. "He was a pecker to you."

"I don't care."

We sat for a few minutes. I thought about things. Then I leaned back next to her. "Dary," I said, "you are driving on a very hot day." I could smell the herbal shampoo in her hair. "A day in which it is over one hundred degrees outside, when you notice halfway up a mountain grade that the temperature gauge on the dashboard indicates hot." I got up from the bed, took a couple of steps across the room, came back. I picked the dirt from my fingernails. "What are you going to do?"

"Edgar, I'm your older sister."

"Come on."

She pulled her knees up.

"The car is overheating."

"I don't know what to do," she said.

I sat lower on the bed again. The two of us pushed together on the quilt. Then, next to her, I started to cry too. I was thinking of Lawrence. Last night I had gone down to his apartment to see him. I almost never went in there. The computer was in a box and his clothes were folded in stacks on the bed. The door was open and the sun was setting, so we went and stood together on the steps. He picked up pebbles from his entranceway and threw them into the yard.

"Have a good time," I said.

"I will."

"When will you visit?"

"I may not be back for a while," he said.

"Not for a while."

"That's right."

"I'll finish the Honda."

"Good."

Then Darienne came down from the house. She walked past Lawrence and stood between us. "I have something to ask you, Edgar," she said.

"What is it?"

"I want to know whether he was going to hit me."

I laughed. I looked at Lawrence's back.

"Tell me," she said.

I laughed again. "Were you going to hit her?" I said to Lawrence.

"I asked *you*," said Darienne.

"You can't ask me that, Dary," I said. "You can't just ask me whether another person was going to do something." I put my hand on her arm.

"Tell me," she said.

"Dary, I can't tell you that. I can tell you what *I* would have done." I leaned down and picked up a couple of pebbles. "But Dary, you knocked over our parts. They're covered with dirt now. There's gravel in the transmission. I can't tell you what Lawrence would or wouldn't do."

"Would he have hit me?"

"I can't tell you that."

Lawrence tossed a pebble over the hedge. "Tell her what you think," he said.

She looked into my eyes. I wanted to change the subject, but I couldn't think of anything to say. I smiled. I really tried to think about it. "Yes," I said. "I think he would have."

Darienne turned and went back into the house. I stayed behind Lawrence. Even from the back I thought he was smiling. I threw the pebbles in my palm one by one over the hedge.

"Do you think *you* would have hit her?" he said. He didn't turn around.

"No," I answered.

He chuckled. I thought he was going to say something more, but he didn't. He let the pebbles drop from his hand.

"You know what I'm waiting for?" I asked.

"You're waiting for me to tell you what I was going to tell you."

"That's right."

"Well," he said. "This is it." He turned around and faced me. "You're a bastard, too," he said.

"What?"

"I mean, yes, you would have hit her too. You just don't know it yet." He pointed at me. "But if something ever goes wrong, you're going to turn into a son of a bitch, just like me." He smiled slightly. "Just like every guy in the world. You don't know it yet because everything's all right so far. You think you're a nice guy and that everything hasn't really affected you. But you can't get away from it." He tapped his chest. "It's in your blood."

"That's what you were going to tell me?"

"Bingo," he said

Then he brushed past me and went into his apartment. I followed and stood behind him in the doorway. A wind had come up and I put my hands into my pockets. He stood with his back to me, placing shirts into a box, not saying anything. He was wearing a jean jacket and chino pants with pleats. We were silent, standing in his darkening apartment, and I tried to imagine what the world was like for him. □

Ethan Canin is a fourth-year HMS student who has taken a year off to continue his fiction-writing in South America. He majored in English at Stanford, trained at the Iowa Writer's Workshop, and worked on his short stories throughout medical school. He plans to specialize in either emergency medicine or primary care.

Poems by Susanne Learmonth '52

OUTSIDE ICU

The chairs are dull green,
the plastic couch sags
enclosing
today's mourners.
They sit
waiting for news,
outside,
outside the sky,
outside their own houses.
Family of victims.

Grief waits on the couch
watching for its prey.
Perhaps,
because of their gray on gray faces,
we no longer see them
as we hurry by,
to save
or
fail to,
another life.

CONFESSION

Do I need to—
no,
yes,
say it:
about being mother first and then
 doctor,
but mother better there
where I should be doctoring,
and less where
I'm meant to be
mother.

The burden of that
and the joy both.
They in sick beds need
me warm mother,
me holding hands,
me holding back tears.

Some of us are best given to strangers
not daring to open to our own.
So there it is my boys,
a cool
holding
holding
back.

CREATIVITY IN THE CURRICULUM

by Rafael Campo

In this heyday of biotechnology, to think about old-fashioned, roll-up-your-sleeves creativity in medicine seems almost a sentimental gesture. Scientific advances are rapidly "changing the face of medicine." Devices sequence DNA, computers make differential diagnoses, machines even keep people alive by taking over the function of failing hearts and lungs. It comes as no surprise, then, that these startling developments have provoked concern and criticism that modern medicine is simply losing touch with humanity.

Perhaps it is not merely nostalgic, but instead crucially important, to consider creativity now—particularly as a response to these fears. It cannot be denied that progress in scientific knowledge is having a powerful impact on medicine; but there is comfort in the fact that the generation of this new knowledge, as well as its implementation, depend entirely on people.

Meaningful discoveries are pursued with excitement by inventive minds. New-fangled treatments are applied carefully by insightful physicians. And somehow, almost miraculously, patients get better under the care of their doctors. The treatment of patients, despite all the technical complexity and the splendor of gadgets and print-outs, cannot occur without contact between two human beings.

It is the nature of this contact, given the huge diversity of possible partners, that commands physicians to be creative. Consider the variety of challenges a physician faces every day: a patient presents with an unusual set of complaints, a chronic alcoholic refuses treatment, another patient speaks only Spanish, a scared child will not hold still to be examined. Whatever specific skills are needed to manage such situations (and they *are* managed successfully every day), physicians are constantly called upon to be creative and resourceful.

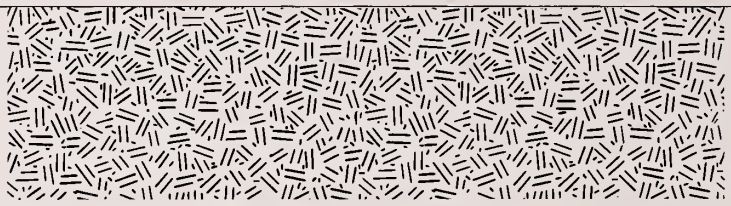
Consider also the richness and diversity of talent displayed by physicians: the works of great writers such as William Carlos Williams and Oliver Wendell Holmes, the bad jokes for each second-year show thought up by not-so-great writers, the Longwood Symphony Orchestra for the musically-inclined, and the poetic, athletic and singing talent in each new first-year class.

Creativity, now perhaps in a different guise, again is linked intimately to

medicine. Thus at least two distinct forms of creativity appear to contribute uniquely to medicine and the people it serves, in ways inaccessible to even the most sophisticated technology. Indeed, many have long believed that such creativity is indispensable to "the art of medicine."

Harvard Medical School remains among the true believers. Throughout its long history, it has produced physicians whose creative efforts have been recognized the world over. The names of HMS alumni are seen in the pages of the *New York Times Book Review* and are heard reverberating through Stockholm's hallowed halls. Even the new Medical Education Center, where students view Eliot Porter's "Intimate Landscapes" on the way to class, pays tribute to this Harvard tradition.

Given the importance of creativity in a continually expanding but decidedly human modern medicine, just *what* Harvard students are learning needs to be examined. So thought the architects of the New Pathway, the newly-developed preclinical curriculum that became (after several additional modifications) "the common pathway." The notion of



TWO SIDES OF A CASE

The Human Biology and Patient/Doctor programs occasionally consider the same patient from opposite sides of the medical chart. One such case, written by Stephen Emond '89, is about a 16-year-old boy who sustains a femur fracture after accidentally shooting himself while hunting. During the Human Body block, which integrates gross and histologic anatomy, this case is used to guide dissection of the lower extremity. "Identify on gross dissection the structures within the anterior and medial compartments of the thigh," reads one exercise question. "Describe the biochemistry of the extracellular matrix: collagen, glycosaminoglycans, and the properties of hydrated gels," reads another.

Emond also wrote a more detailed, autobiographical account of the case from the patient's point of view to be used in the Patient/Doctor program. There, the story is used to generate discussion on a set of very different questions. "How does hospitalization reinforce the sense of 'invalidness' a patient might feel?" "How important is a 'positive mental attitude' in the healing process? How can a physician foster or hinder such an attitude?" "How does the care-delivery setting (eg. rural, community hospital versus a tertiary-care, medical "mecca") affect the interaction?" "What emotional risks are involved in 'subjectivity', and how might it adversely affect good patient care?"

The following is an excerpt from the short-story entitled "Growing Pains," written by Emond for the Patient/Doctor program.

One evening Dr. Mason stopped by at nine o'clock, after a long day in surgery. "How's everything?" he asked at the doorway. He had no way of knowing I was angry. A classmate bent on making my hospitalization even more of a side-show exhibition had just left after complaining to the nurse about the short visiting hours. Mason was the victim of my pent-up frustration when I blurted: "Everything is fine! It's just a matter of time before I'll be up and around! No news is good news, right Doc?"

He said nothing as I blustered and fumbled, "Look, I did a stupid thing. I shot my own leg, I put my parents in debt, and I can't even heal like a good young man! That's 'how's everything'."

He stood silently for a moment, then gestured to a chair. "May I?" he said. He shut the door softly, then sat down. He rested there, quietly stroking his beard with his fingertips, and I thought, "Great. Now he has to deal with a crazy kid."

Then he shifted in his seat and said simply, "It's about time you got pissed off. I was wondering what was taking you so long."

Pissed off? I thought, somehow embarrassed by the words. "Yeah," I said out loud. "I'm pissed off."

"You should be," he replied. "Things aren't following the rules." He waited, then continued. "But you have to remember a couple of things. Firstly, accidents are called accidents for a reason. You didn't set out to shoot yourself; you dropped your rifle! You were careless for a second, and all this is a result. And you feel guilty, which is what every person in the world feels when they make a mistake. But you are the only person who is still blaming you."

He paused. "And secondly, you have tried to be a hero through this mess, smiling as if nothing fazes you. Well, it had better faze you! You have been lying here in bed for months while the world passes you by. You are 16 years old, man! Let up on yourself. If people are being a pain in the ass, tell them to get lost. You have enough to deal with without taking the problems of the world on your shoulders. . . . "

He trailed off, as if surprised by his own outburst, then chuckled softly. "How's that for a pep talk?"

"Pretty good," was all I could manage.

He got up and walked to the door. "And now I've got to go home. Just let us know what you are feeling. You're not the only one who's frustrated. See you tomorrow."

After the nurse checked my blood pressure and pulse I asked her to close the door on her way out. I covered my face with my pillow and cried myself to sleep. □

creativity, though not an explicit goal of the common curriculum, has certainly found room to grow within it.

By making this room, medical educators at Harvard reaffirmed their commitment to the institution's burgeoning creative energy. In accordance with a curriculum that fosters creativity, new ideas from faculty and students are being actively recruited, and applied, for perhaps the first time.

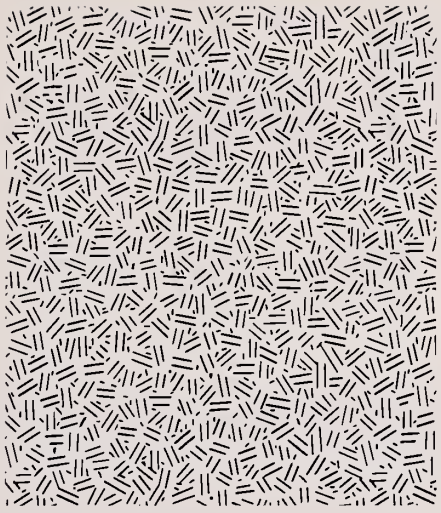
These ideas are channeled toward the three key features of medical education at Harvard: the tutorial method of teaching, the emphasis on disease prevention, and the early application of knowledge in developing clinical skills. These targeted areas, along with the creativity they engender, are accommodated in both arms of the curriculum, namely the "Human Biology" and "Patient/Doctor" programs.

Human Biology is a revamped version of the traditional first two years of preclinical training. This time was formerly spent solely in lecture-based courses on the basic sciences; students currently study in integrative blocks. Through the presentation of closely-related disciplines in a unified fashion, students glimpse how they might be expected to apply their developing knowledge in future careers. The study of clinical cases in the tutorial setting reinforces this associative learning, while stimulating early development of skills needed to make differential diagnoses.

In addition, laboratories and conferences have been redesigned to promote problem-solving skills; a typical lab exercise is built on thought-provoking questions, rather than methodological and descriptive details. Even the much-maligned lecture has been revitalized as a place where students can witness creativity in action. Student attendance is high at "frontier lecture" presentations by such experts in their fields as Philip Leder '60 and Robert Colvin '68.

Accompanying Human Biology will be a pared-down Patient/Doctor program, which will continue to emphasize psychosocial dimensions of disease. Recent major changes have to do with the amount and type of contact with patients. The development of student interviewing skills, rather than the physical exam, will be the new focus of the first year. (The second year will provide ample time for initial exposure to the physical exam, along with continued attention to psychosocial issues.)

Students asked to invent questions for the various histories will still have to exercise their creativity. Moreover, greater coordination between case materials, tutorial discussions, and the contents of the Human Biology program will allow students to reach out and make more connections between real patients and basic science.



Even the much-maligned lecture has been revitalized as a place where students can witness creativity in action.

These changes, especially when combined with contributions from social and behavioral scientists and clinicians, provide time for impressionable first-year students to consider patients as people. The changes have also permitted educational planners to utilize teaching resources better; by demanding less time of individual instructors, caregivers from neighborhood health centers and private practice can be included.

Creative energy is thriving in the curriculum as the following examples of how students experience and use it show:

—Students and faculty share autobiographies, which serve as introductions at the beginning of a course, as well as precedents for continuing self-reflection.

—Reference is made in readings to creative writing (from original research to short stories) by physicians and patients, which illustrate how some have used creativity to deal with unique experiences in medicine.

—Cases written by medical students and faculty provide fertile ground for discussions on basic science and the clinical, psychosocial and ethical issues central to medicine.

—Students are allotted "self-structured" time, which permits them to define their own learning objectives and pursue areas of individual interest, be these athletics, original research, creative writing or any other special talent.

—The strong emphasis on problem-solving, knowledge acquisition, and group interaction skills help students develop the skills and habits of mind deemed the most useful for maturing physicians who aspire to practice modern medicine effectively and humanely.

During the actual study of any given case, students receive bits and pieces of information in an effort to simulate how such information is obtained in the real clinical setting. The students then act on the information accordingly: ask questions, generate hypotheses, set learning agendas and discuss areas of concern. Various diagnoses are suggested, ways to test these are elaborated, results of tests are obtained, and eventually a differential diagnosis is reached and treatment planned. One can see all these aspects of this exciting way to learn by observing students in action, attacking a case through the complementary Human Biology and Patient/Doctor materials.

The small size of the tutorial groups permit students to talk freely about sensitive issues like death. Personal experiences are shared and discussed, and painful emotions often surface. Just as often, hypothetical scenarios are imagined, and reactions are articulated and compared. Sometimes the stories are beautiful. Usually, an experienced clinician is present to relate a well-worn anecdote, containing an obligate nugget of wisdom.

Lewis Thomas '37 ended one of his essays in *The Youngest Science* with a particularly eloquent thought about the plight of humanity and medicine.

> If I were a medical student or an intern, I would be worried about this aspect of my future more than anything else. I would be apprehensive that my real job, caring for sick people, might soon be taken away, leaving me with the quite different occupation of looking after machines. I would be trying to figure out ways to keep this from happening.

Perhaps by expanding the role of human creativity in medical education, the new curriculum is itself a creative way of doing just that. □

Rafael Campo '91 is a member of the Bulletin*'s editorial board. He has published short fiction and poetry in addition to scientific material. He wishes to thank colleague and fellow writer Steve Emond '89 for his suggestions and encouragement.*

Eliot Porter: Privileged Moments

by Edgar Wayburn

The 1960s were exciting times for the burgeoning conservation movement in the United States. Ideas about nature protection that had been around for many years were becoming better defined and more politically significant. The Sierra Club had evolved rapidly from a small, regional, California organization into a large, national society, and was expanding its vision, activities and power. As president of the Sierra Club from 1961 to 1964, and again from 1967 to 1969, I was privileged to be a part of this scene.

In 1960 the Sierra Club published the first of its large-scale books in what was later to become its Exhibit Format Series. *This Is The American Earth*, with black and white photographs by Ansel Adams and text by Nancy Newhall, made an immediate impact upon America, helping to stir the awakening conservation consciousness.

Soon after this bellweather book was issued, David Brower, the Sierra Club's executive director and founder/editor of the Exhibit Format Series, brought to my house a beautiful selection of color photographs by Eliot Porter. At that time I knew of Porter only vaguely—as a fellow graduate of Harvard Medical School and a teacher of medicine. I had no idea that he had left his medical activities to become a nature photographer, and a pioneer color photography artist.

As Brower spread the Porter photographs before me that day, he said: "Don't you think that these are wonderful? Don't you think they would make a splendid book?" I gazed at them with awe. Of course they would make a great book! They were magnificent. But could the Sierra Club undertake the tremendous effort and expense involved in producing a book with the kind of color these images merited? Brower obtained the necessary financial support and, with his customary energy, went to work editing and designing the award-winning volume, *In Wildness is the Preservation of the World* (1962) with photographs by Eliot Porter and the words of Henry David Thoreau.

Porter writes in the preface: "In a sense the book began when my father bought an island in Maine. . . . Summer after summer its white beaches, its dense forests, its sour, salty sea smells came back to life after the long gray winter." This coastal landscape had inspired Porter to capture its images on color film, at that time a newly evolving art medium. Soon after World War II, he had also become seriously interested in the writings of Henry David Thoreau.

For several years Porter selected as inspiration what he considered Thoreau's best words and photographed in all seasons the woods, streams, ponds and marshes of Thoreau's New England countryside. "I hoped to be able to complement in feeling and in spirit Thoreau's thinking . . . ," he wrote, "and to show the peril we face. . . by our ever faster destruction of the life not our own . . . (it was) my wife (who) suggested I do a book about Thoreau."

How well Porter succeeded is noted by Joseph Wood Krutch in his introduction to *In Wildness. . .*: "Here, with sensitivity and with complete understanding, Porter's pictures are truly in the spirit of Thoreau."

It was to be a happy and ongoing combination for both the Sierra Club and Porter. Other publications of Porter's photography followed: *Glen Canyon, The Place No One Knew* (1963); *Summer Island: Penobscot Country* (1966); *Baja California and the Geography of Hope* (1967), and finally *Galapagos: The Flow of Wildness* (in two volumes, 1968). From 1965 to 1971 Porter was also on the board of directors of the club.

As the titles of his books suggest, Eliot Porter's photography grew to encompass much more than the gentle landscapes of Maine, the countryside of his roots and childhood. He embraced and captured the magic of far off wild and beautiful places he wanted to remain wild and beautiful. He brought remarkable perception to all his work.

As Krutch wrote, Porter "can select and frame his pictures in such a way as to reveal the pattern and design which the more casual observer has failed to see. . . . (He is a) master photographer . . . (who) discovers rather than invents, and in that way he (seconds) Thoreau's most insistent injunction, namely, 'Be not among those who have eyes that see not and ears that hear not.' "

To again quote Krutch, this time from the introduction to *Baja California*: "Eliot Porter's photographs for all their detail and realism, are works of art which record an individual artist's vision. . . . (His) is an art which reasserts the conviction that nature is the source of all beauty and the sole inspiration of art."

Through his art and actions, Eliot Porter has not only enriched the environmental movement in the United States, he has enriched the visual world for us all. □

Edgar Wayburn '30 is director and vice president for National Parks and Protected Areas of the Sierra Club. He is senior editor of the Western Journal of Medicine *and* emeritus *associate professor of medicine at UCSF.*

Eliot F. Porter '29 turned full time to photography after ten years in Hans Zinsser's bacteriology department at HMS. His first major exhibition was organized by Alfred Stieglitz at An American Place in New York in 1939; there have been many more exhibitions since, including a one-man show, "Intimate Landscapes," at the Metropolitan Museum of Art in 1979. In addition to the Sierra Club series, Porter has published books on Greece, China, Antarctica, Maine and the birds of North America.

The quotes accompanying his photographs on the following four pages are from his most recent book, Eliot Porter *(Little, Brown and Company, Boston, 1987), an autobiography with more than 130 of his photographs.*



Couverville Island, January 1975

"The further into the strait we pushed, the more crowded with ice and icebergs it became, as though, in response to our bold challenge, the incarnate forces of nature assigned to guard the passage against intrusion were mobilizing subtle means to frighten us into retreat. We pressed on undismayed."



Blue-winged Warblers, Battle Creek, Michigan, June 1955

"The first objects of nature that attracted me, as might be expected, were the most colorful ones. . . . Gradually the more subtle hues began to draw my attention—the colors of earth, of decaying wood, of bark, and then the strange colored reflections one sees when one looks for them."



Mud cracks and pool, House Rock Canyon, Arizona, June 1967

"I have had years to experience in my own work, and observe in the work of others, that the rare photograph, the work of art, is the conscious product of personality, the expression of individuality, of vision and understanding of truth."



Lichens and Blueberry leaves, Maine, June 1978

"But before all else a work of art is the creation of love, love for the subject first and for the medium second. Love is the fundamental necessity underlying the need to create, underlying the emotion that gives it form, and from which grows the finished product that is presented to the world."



FERTILE MINDS

Where Curiosity Leads

by Ellen Barlow

In his ceaseless search for novelty, Mark D. Altschule '32 has covered a lot of ground. He is simultaneously a clinician, researcher, teacher, sculptor, voracious reader, original thinker, collector of rare books and art, historian. If, as he suggests, creativity is driven most simplistically by curiosity, Altschule's creativity is in over-drive.

Though he's now house-bound with a heart ailment, Altschule intellectually still grazes freely. One April morning in his home in Harvard, Massachusetts, we talked about his life and creativity in art and medicine. "Can't call me typical," he says, "but by being atypical, I'm typical."

Altschule grew up in the Lower East Side of New York City, the son of Russian immigrants. His father hadn't known English when he arrived in the U.S. in 1894, but after only six months he took the state's examination for pharmacists and scored the highest. He was extremely well read. Mark Altschule's father and his mother, a weaver and decorator, both had relatives who were physicians and artists. His sister, Hilda, became a professional painter.

His family environment was an intellectual one. By the time Altschule was

Above: Cotillion *by Mark Altschule*

12, he had read the works of Nietzsche, Plato and Schopenhauer. "The prevailing attitude in our family was independence of thought and refusal to accept authority of any kind."

It was at the age of four, he says, that "he suddenly began to sculpt." He formally studied sculpture while attending high school and, his talent recognized, there was discussion about further art studies in Rome. Instead he went to City College and after graduation in 1927, worked as a laboratory technician for two years before he applied to medical school. Out of six applications, he was accepted only by Harvard.

Altschule by his own admission never did fit into an organized educational structure. But given academic freedom, in his first year of medical school he pursued his own ideas about the embryology of the kidney and published his first solo paper. There were hundreds more to come. That first year he also took sculpture classes at the Copley Art Society five nights a week.

Throughout his career, which he spent entirely at Harvard and its affiliated hospitals, Altschule climbed no pre-set academic ladders. Instead he made it a point to follow whatever line of research interested him—from cardiovascular disease, stress and mental illness to the role of nutrition in medicine. To each discipline he brought fresh insights and solutions. "If there was something I didn't understand, I'd study it," he says.

A major lament Altschule expresses is that clinical medicine has "slipped downhill" in this century as the German ideal of science-based medicine was embraced and bench research emphasized. To base medicine on science, he explains, is to reduce patient care to statistical averages, whereas each patient is really an individual.

"They say the German scientific method is the only way to find the truth, but my response is: How do you know the truth when you find it?"

Altschule thinks HMS was at its best in the days of Stanley Cobb, an HMS professor of neuropathology who in the 1920s and '30s clinically integrated psychiatry and neurology, and took what is now termed an "holistic" approach to treating patients. It was best in the days when the Thorndike Laboratory was doing pure clinical research.

"I liken biochemical research to elephants in a circus—all in a circle, hanging on to the tail ahead of them, doing the same thing and getting peanuts," says Altschule. "There are a great number of examples of people thrown outside this circle of elephants who innovated. In fact it takes an outsider to make inroads."

In his soon-to-be-published book, *Essays on the Rise and Decline of Bedside Medicine*, he argues that the great era of clinical medicine was the 19th century, when investigation emanated from problems encountered at bedside. "There's been a lot of talk about technology in the 20th century, but that's the consequence, not the cause of advances." The mechanical clock was invented in the 1400s not by a mechanic, says Altschule, but by a priest who didn't want to listen to water dripping—the way time had been told previously. *After* the invention came the theory to explain the action of the wheels and gears.

Using his own hospitalization as an example, he points out that thousands of dollars worth of tests were performed on him. "Most of the tests were too artifactual, too theoretical and too irrelevant to help in clinical decision making. They did have the effect of making the cost of medical care very high. Diagnostic gadgetry is usually uninterpretable, and in any case unnecessary."

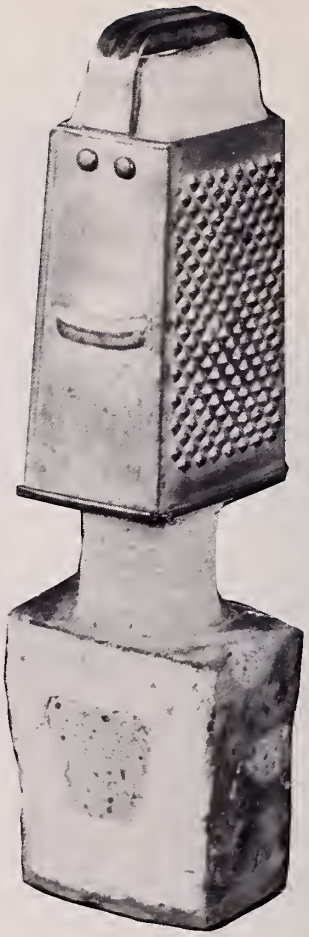
A pattern he found in writing his book was that many famous physicians in the 18th and particularly 19th century were artists, writers or musicians who practiced medicine on the side. The main effort of Withering, discoverer of digitalis, was the creation of a two-volume atlas of the plants of Great Britain, which he painted by hand. He also played the flute. Charcot was a talented artist who made pen and ink drawings of patients during seizures to study their effect in detail, and Hodgkins traveled the countryside to do watercolors. Physicians also wrote poetry ("abominable, but they did it").

Dedication to observation, Altschule believes, is what physician/artists bring to both art and patient care. He speculates that the mental processes leading to originality in the arts and science are the same. Each discipline enhances the other. "My involvement in the arts has made me a better clinical observer."

He feels that his ideas did not arise from inspiration per se. "It was more in the realm of curiosity. I'd see if I could work out a problem."

In fact, in a 1959 paper debunking the diagnostic label "anxiety neurosis" (Altschule has never been a fan of Freud's), he argued that it is curiosity or the need to avoid boredom—not the avoidance of anxiety—that is the prime





Portrait of Mark Altschule by his sister; and below as he really looks.

PHOTO OF M.A. BY JUDITH BRENNING, OF SCULPTURE BY NICHOLAS BAKALIS

motivating force of human activity. Any novelty has attraction.

He mentions a classmate who could compose 2000 lines of rhymed couplets in a few minutes. What about people like him who clearly have something extra, something more than curiosity? Altschule's response is less certain. "That point has been gnawing at me for 82 years. How do you explain it? You can't. You can't explain mental processes."

He describes where he lived as a kid, a "slum" one-half mile by one-half mile that had Jewish, Polish, Italian and some Irish families. When they met for a 25-year reunion, there were judges, 10 college professors, a famous Hollywood director, businessmen and an inventor. All had been poor and seemed ordinary when growing up. The next area over, the kids were all gangsters and there was constant violence.

"How do you explain it?" □

Observations

by Mark D. Altschule

Discussing creativity creatively is difficult. For one thing it is a mental process, or a variable combination of such processes, and mental processes cannot be defined. In the second place it is recognizable only by its effects. Its operations become known to us only occasionally, and usually by chance. What we do know is that it is both highly important and recognized relatively rarely. (What research today is called innovative creativity is nothing but development. There is almost no genuine research going on in the U.S. in medicine and related subjects.)

The interpretation of the presence of creativity is greatly affected by societal forces. For example, in earlier eras men graduated in medicine, but preferred not to practice it, preferring instead to be attorneys, chemists or physicists: Fourcroy, Poisseille, Bernoulli and Helmholtz were among this group. Their becoming physicians first was due to familial or societal pressures; their becoming something else is not to be taken as evidence of creativity. Or for that matter the same might, or might not, be said about physicians who gave up medicine to become novelists: Smollet, Goldsmith, Chekhov, Maugham.

Despite these and other ambiguities that must weaken any discussion of creativity, the fact remains that creativity in medicine itself offers few difficulties, or at least didn't until the financial power of certain foundations and government agencies imposed the notion of "scientific medicine"—a figment if there ever was one—on medical education in this country. Soma Weiss's survey of German medicine after the turn of the century in the *Harvard Medical Alumni Bulletin* in 1936 showed how this figment already had damaged German medicine. Unfortunately his comments were published in a journal with few readers. Now the figment is the established mode in American medicine.

Before entering into our discussion of creativity in medicine, it might be advantageous to consider the possibility of creativity in some form among species other than man. This is difficult, for Central European Wertherian woe has so corrupted human psychology as to rule out similarities between human mental activities and the behavior of animals.

If one disregards the *oi vey survey* nature of modern American psychiatry, which holds that anyone who has ever had one or more parents is doomed to misery, one may find certain analogies between the creative urge in man and the heavily studied exploratory drive in all active animals, a ceaseless search for novelty in some aspect of the environment, which in 1959 I discussed as the "Invalidity of the Diagnosis 'Anxiety Neurosis': Notes on Curiosity and Boredom as Motivating Forces" in the *New York State Journal of Medicine*. If indeed the exploratory drive in animals and creativity in man have



St. Peter Celestine (1950)

SCULPTURES ON PP. 39-41 BY MARK ALTSCHULE



L'Amour or a Reasonable Facsimile Thereof

something in common—curiosity—the matter should be studied, however banal it may seem at first glance.

Although the nature of mental creativity cannot be defined, because the nature of thought in general cannot be defined, certain considerations have been helpful. The thinking of the associationists and the reflexologists of the past century have been helpful, and indeed have come down to us in modern form in the work of B.F. Skinner and his pupils. Perhaps the most interesting idea of earlier times was that of Sechenov in Russia, who believed that the *inhibition* of ordinary neurogenic phenomenon in the brain produced thought. The czar's police became interested in his ideas, but he escaped. Today, along with Pavlov and Vedenski, he is regarded as a hero of Soviet neurology.

Although we know nothing about the mental processes involved in creativity, we can learn something about creativity through observations of history. For our purposes here we will examine the history mainly of 19th-century clinical medicine in Europe, excluding Germany. First I must emphasize, however, that even earlier practicing physicians occupied themselves with subjects unrelated to medicine to a degree equal to that which they applied to medicine. Thus when Gilbert carried out his studies on magnetism he was not pursuing a hobby. These studies were just as much a part of his life as medical practice was. An even more striking example is Copernicus, who is known today not as the leading practitioner in Poland but as a great astronomer.

This theme of equal pursuit of some non-medical activity alongside the practice of medicine was a common one



until the mid 20th century. The mid and late 19th century was a golden age of clinical medicine. The invention of physical diagnosis gave clinical medi-

Three Flights to Illumination

by Fuller Albright

The domain of knowledge is constantly moulded, now this way, now that. Seldom can the direction be foretold. But now and again a man appears who predicts and lays out a whole new section. Some discoveries open gates to untrod areas and unloose a throng of eager investigators. Great trees are grown in ground prepared by numerous toilers. All help. Those who open gates become heroes, and their work has a dramatic flavor. In their achievements we often see the result of the play of enlightened minds upon facts established through the labor of a host of men of lesser stature than they. Occasionally a great path-finder must set aside all previous knowledge and strike out anew.

Oliver Wendell Holmes once spoke of minds as "one-story intellects, two-story intellects and three-story intellects with skylights."

"All fact collectors," he continued, "who have no aims beyond their facts are one-story men. Two-story men compare, reason, generalize, using the labors of the fact collectors as well as their own. Three-story men idealize, imagine, predict; their best illumination comes from above through the skylight."

The picture of intellects painted by Holmes may well be applied to scientists. Often a "three-story" man has found illumination through the work of a one-story man. Throughout nearly an entire lifetime Tycho Brahe sat in his laboratory, assiduously observing and recording, night after night, the precise position of the planets and stars in the sky. Though the figures meant little to him, they were a great contribution to science. Kepler, a calculator par excellence, seized upon this amorphous mass of figures, and from out of the confusion there emerged three great laws of the movements of planets. This fortuitous conjunction of Tycho Brahe's patient accuracy with Kepler's ability to put two and two together and get four—the one-story intellect with the three—turned out to be extremely significant for science.

The development of scientific knowledge is a complex process, and many kinds of intellectual activity are concerned with it. First, there is seeing, or observation. This leads to thought and more observation. The process of seeing and thinking about



Cigarette Girls Gossiping

cine the nature of human interaction, the results of which were checked by gross pathological studies. This mode existed everywhere except in Germany, where the figment of "scientific medicine" became established early in the century, and has persisted for decades.

A common pattern of activity among 19th-century physicians was the almost full-time pursuit of some non-medical activity. Many physicians either inherited or married money, but the others had to make a living, and for this purpose they used the practice of medicine. Much or most of their time was occupied by other pursuits, at which they became expert. Music, painting, classical studies, poetry, archeology, book collecting, gardening and other 'cultural' subjects were pursued as a main activity.

Did this make them better physicians? I believe it did, as emphasized in my *Essays on the Rise and Decline of Bedside Medicine*, now in press. These activities were manifestations of the creativity that was common among physicians then, before the superstitions of scientific medical education submerged it. Although we know little about the mechanisms of creativity in medicine, or any other mental activity, it appears that certain educational practices may act to submerge it.

At the moment, it appears that we know more about killing creativity than how to nourish it. The latter conclusion is supported by the neglect of publications on important clinical concepts decades or centuries before their "rediscovery" and incorporation into any medical curriculum. □

Mark D. Altschule '33 was formerly a clinical professor of medicine at HMS. He is trustee and honorary curator of the Boston Medical Library's Prints and Photographic Materials and, among many other titles, is president of both the International Catacomb Society in Boston and Tott's Gap Institute in Bangor, Pennsylvania. He is also a trustee of the Eleanor Naylor Charitable Trust in New York City.



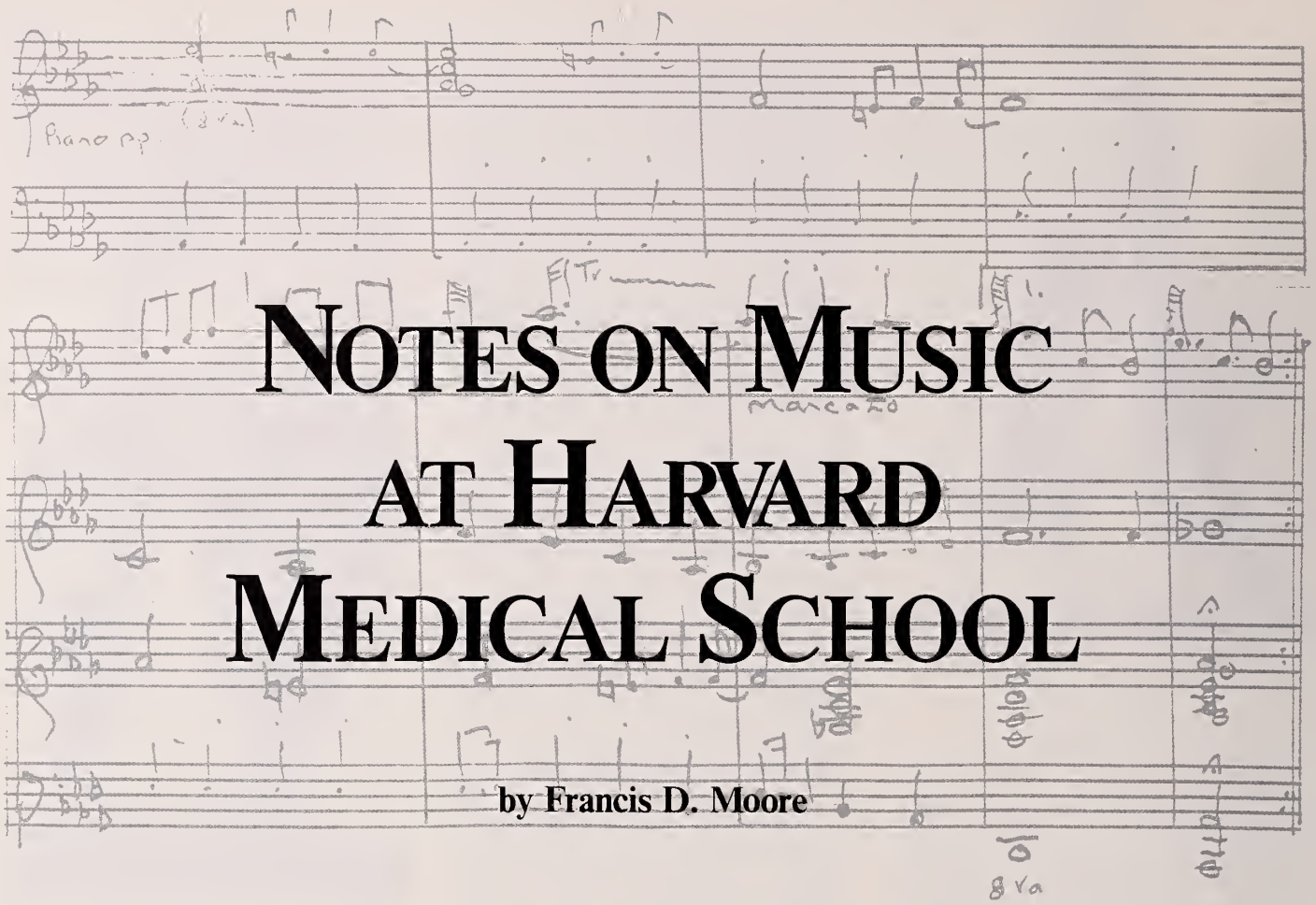
Self-portrait at the Age of Ninety (1927)

natural phenomena is called "natural science." Ideas are combined with other ideas, and progress is made. While wandering on a mountain slope, Leonardo da Vinci once found some fossils of animals known only in the sea. He was led to believe that the mountain slope had been raised from below the sea at some time in the dim past. This, together with other of his ideas, laid the foundations for the science of geology.

Another method of science is that of trying or experiment. Someone has an idea; a set of conditions is arranged and an experiment is made to test that idea. From the results of the experiment more ideas are born. These lead to new experiments, and so it goes. Nature, of course, makes many experiments for us. As a rule, however, she does not arrange conditions so that we may learn the most from her experiments. Worse than that, nature's experiments seldom occur at just the right place in man's line of thought.

Occasionally they do. Archimedes, climbing into a bath while his mind was dwelling upon the properties of floating bodies (even without the assistance of Ivory soap) suddenly, as the bath flowed over, cried "Eureka" and discovered the law of the buoyant effect of liquids upon substances immersed in them. And, when within our own memory the astronomer royal of England announced to the Royal Society of London that the measurements of the light waves passing the sun during an eclipse had shown the exact bending predicted by Einstein, and that his Relativity Theory had thus been verified, it was a great moment in the history of science. As A.N. Whitehead said, "A great adventure in thought had at length come safe to shore." In spite of such timely natural experiments, man has taken largely to making his own, and the progress of science attests to his ingenuity. □

Fuller Albright '21 was a renowned HMS endocrinologist based at the Mass. General Hospital, whom colleagues have claimed had a new idea every ten seconds. This excerpt is from an unpublished draft of a book on parathyroid disease called "Uncharted Seas," which he wrote in the 1930s but never finished. He died in 1969.



Notes on Music at Harvard Medical School

by Francis D. Moore

Leopold Bronowski in *Science and Human Values* makes a statement that has long stuck in the minds of his readers. He states that it is the mission of both science and art to find unity in the diversity of nature.

The more one thinks about this unifying credo for science and art, the more appealing it is. For example, the many ways are quite remarkable in which science has analyzed the diversity, sometimes the seeming chaos, of nature, finding unity in the general rules, patterns or "laws."

In art, consider the Renaissance painters of religious subjects, the early landscapists, the French impressionists, the bridging art of Picasso, and now some of the modern works of graphic artists: all have perceived in nature some unifying message or epiphenomenon that might sentimentally be called a "soul," that they transferred by brush strokes of pigment onto canvas, each in a totally different style. An especially appealing example is found in the pointillism of the French impressionists, where each little point, viewed alone, is almost meaningless, but taken together one sees a remarkably unified image of some human or natural experience. In painting, the concept, the composition and the rendition are simultaneous in time; the viewer is left to respond or react without the need of an intermediary.

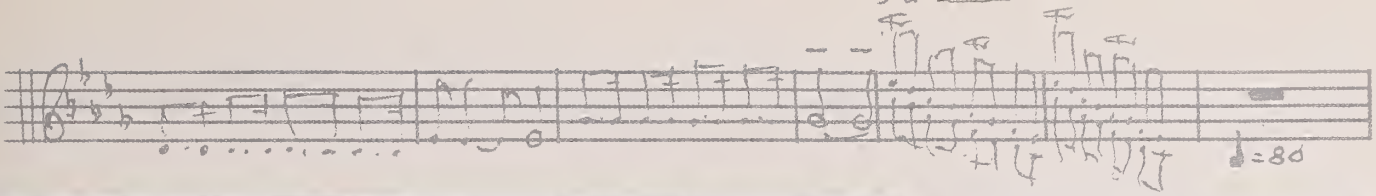
It is only natural that physicians have interest in art. They are trained to perceive a special unity—in a sense a scientific unity—in the diversity of nature. This unity is sometimes termed "diagnosis"; diversities lie in the limitless variations on the theme of bodily changes in the living human being. Many perceptions in medicine, like that of diagnosis, are based on pattern recognition.

In art, the physician looks at the surrounding world and finds many patterns and some unifying or artistic reality—a diagnosis, in a sense—underlying the immense diversity of visual images impinging on the retina. These are then recorded as a sketch, a painting or possibly an artistic photograph (the latter, an art in which many Harvard physicians have excelled).

There is an additional aspect of music that might be especially appealing to physicians who work with their hands—including surgeons and also many in medicine, general practice and radiology. In music there is a pronounced ambivalence or separation between the act of perception or composition and that of rendition or performance. The former is a thing of the mind, the latter of the mind and the hands. The two—composition and performance—may be separated in time by centuries and yet both of these human musical interactions are truly creative.

The painter perceives what is going to be painted and may then paint it in just a very few minutes or hours; it remains the same for many years. In an analysis of certain traits of genius during one of the sessions on medical biography held at Countway Library (honoring the late Dr. Norman Geschwind), it was pointed out that Vincent Van Gogh turned out hundreds of paintings every week in one of his seemingly craziest periods. This staggering creativity combined with manual dexterity left a permanent message for any viewer at any time. A piece of music, in a Berkeleyan or existentialist sense, simply does not exist between performances.

The composition of music is usually carried out entirely independent of its performance. What appears to the eye is only a series of ink dots on lines. Only to the very highly trained eye is this graphic or visual message translated into sound without a third-party player.





Above: Eddie Chen on violin, with Jack Stabile on piano. Hand-scripted musical composition on these pages is by Francis Moore from the theme of Ellington's "Mood Indigo" for trumpet, clarinet and piano, composed in 1985.

One of the best examples of this translation without performance is Beethoven in his later years. Though deaf, he composed some of his most marvelous music without hearing it played or playing it himself. Mozart—another incredibly productive musical genius— wrote almost all his operas and his great Requiem, unfinished because of his death, in the years 1786 to 1791 when he was increasingly ill (possibly of renal failure).

On the other side of this rather schizoid nature of musical personalities is the performer who never makes any pretense of composition. This is how most physicians enjoy their creativity in music. It is interesting that some of the greatest performers of our age—Fritz Kreisler, Yehudi Menuhin, Isaac Stern, Jascha Heifetz, Vladimir Horowitz, Ignaz Paderewski—never wrote more than one or two short pieces, if even that. Others, such as Rachmaninoff, Bach, Mozart, Beethoven, Brahms and Bernstein, were at the same time great composers and superb pianists (or harpsichordists).

One of my remarkable childhood opportunities in Chicago was to attend many concerts; I remember hearing Rachmaninoff play, about 1925. He was a huge man with very long arms and large hands, yet he could play the intricate tracery of his own music with the delicacy of a Mozart on the harpsichord. This fine tracery of musical passages of great rapidity is the "pointillism" of music. Each note, or even each dozen notes, alone means little. But the whole passage may have immense musical meaning, and its performance carries as great a significance as its structure or composition in the total artistic effect.

Another contrast between graphic arts and music is shown by the fact that painting finds its origin in nature and in the colors, patterns and pigments of nature, while in nature there is nothing that can be called music other than the song of birds. Music has the qualities of melody, pitch, rhythm and harmony. Music is a creation entirely of man, a language, in a sense, of mankind.

This *HMAB* issue is designed to set forth creativity among physicians. The performance of music is a creative act that has always played a role in Harvard Medical School. The following paragraphs are merely the story of one person's journey through this Harvard harvest of medical musicality.

About 1930 there was a men's singing club in Boston called the "Saengerfest". It was composed of graduates of the Harvard Glee Club or other college glee clubs and choral societies. The Harvard Glee Club was conducted at that time by one of the most gifted American choral conductors and composers, Archibald "Doc" Davidson. The Saengerfest met at The Engineer's Club, on the corner of Arlington and Commonwealth Avenue, near the site of the new Ritz addition. It was a privilege and great fun to be asked to sing there. The music was largely of a "glee club" nature, meaning works published in the "Yale Song Book," a staple of the period. These were light-hearted, semi-serious, and quasi-harmonic works that were easy for male voices to sing.



Anne Marie Gorczyca





Peter Greco accompanies Sharon Curzon.

At that time the Harvard Glee Club, under Davidson, was already performing much more complex classical music. It had been my job to accompany the Harvard Glee Club for a while, and then to sing, when, with the Radcliffe Choral Society, the groups together performed the Bach B Minor Mass with the Boston Symphony under Serge Koussevitsky. Meager attempts to accompany the glee club as a college freshman, were gently discouraged by Davidson, who said that I might do somewhat better as second bass (not a baseball position).

In any event, the Vanderbiltische Saengerfest was modeled on the prototype at The Engineers' Club and was started at Vanderbilt Hall sometime around 1930. The members of this group were HMS students who had sung in their college glee clubs, plus others who could take the time. We sang the same sort of "Yale Song Book" songs in the small commons dining room. There were some remarkable voices amongst HMS students at that time. Many will remember particularly the wonderful tenor voice of Henry Heyl '33, later a neurosurgeon at the Hitchcock Clinic in New Hampshire.

The fourth year of medical school was heralded by the possibility of being summoned to take part in the Aesculapian Club. This brought with it the possibility of playing a role in the Aesculapian Show, which at times was put on entirely by members of the club. It was patterned somewhat after the Triangle and Hasty Pudding shows of Princeton and Harvard.

While at college and active in the Hasty Pudding Club, I had helped with the music for a show entitled "Hades! The Ladies!" This was a sitcom about the admission of women to Harvard College and the merger of the Vincent Club with the Hasty Pudding Club. Although soon to be realized, this situation (the former, not the latter), brought down loud guffaws of hilarity due to its high degree of improbability. We looked around for a coach and found a young scholar from England on a Commonwealth Fellowship who agreed to coach our show, Alistair Cooke. As you can imagine, we had a great time with this show and with learning drama from the coach.

When my fourth year of medical school came around, no arm twisting was necessary to get me involved with the music for our Aesculapian Show in the fall of 1938. This show centered around the career of John Rock. He was the gynecologic surgeon and endocrine researcher who later achieved great fame for his work in contraception. But at that time, he was pushing the "rhythm" method of birth control, the only method acceptable to the Catholic Church, of which he was a devout member. He was just starting his remarkable experiments with birth control pills, even in some Catholic countries such as the islands of the Caribbean, and was starting to talk his church elders into going along with him in these endeavors.

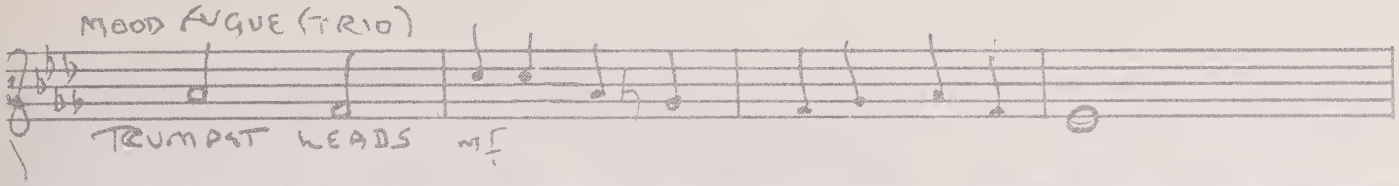
However that may be, the "Rock rhythm" method of birth control was a source of both population control and ribald humor amongst medical students. One of the main songs of our show was "Rock, Rhythm and Romance." The term "rock" had not yet been coined to mean any sort of jazz music, but this remarkable song (I may be biased) had a lot of good strong booming tenths in the left hand and a good bit of what we might now call "hard rock," certainly lots of rhythm, even if lacking in romance.

The Aesculapian Show in those days was a bit more scurrilous than it is now: the chorus of the Class of '39 who sang "Rock, Rhythm and Romance" were all in female costume, otherwise known as "drag." When they turned around each was carrying on the back a calendar which had certain days indicated. So the message of the song and of the chorus was quite clear, no matter how sexist or male-chauvinist might be its current interpretation.

After that, we all went on to internship and residency, and lost contact with music at the medical school. Others in the oncoming generation were active. The Vanderbilt Chorus was started right after the war (about 1947) and continued for about 15 years under the leadership of many alumni, especially Jim Gamble '45. Other musically inclined alumni might be stimulated by this article to write in their memories of that—or any other—period, and help flesh out the record.

About 1974 we discovered by pure chance that there were a couple of excellent pianists in the medical school, one of whom, Ernest Wu '76, also had remarkable entrepreneurial talents. He helped to get together other students, and the Harvard Medical School Music Society (HMSMS) was formed then and there. It is still very active in its 14th year of existence.

The first HMSMS concert was a Christmas Concert conducted on December 13, 1975 in the dining room of Vanderbilt Hall. The team of women who ran the dining room fixed it all up with Christmas decorations. They pro-



vided a table setup like that at the Boston Pops; people could sip wine or beer while they listened to the concert. The last item on the concert was the chorus, the "Grand Rounds Singers," who earlier had sung some rounds very grandly, and who then stood on the winding stairs of the dining hall to sing Christmas carols.

It was a memorable occasion with both students and faculty taking part in all aspects of the program. Dick Shatzki, formerly of the department of radiology at MGH, played some two-piano pieces, with me trying to keep up on the second piano. Dick was about 15 years older and a far better pianist; rehearsing with him amounted to having piano lessons, which I badly needed. We played the Bach G Minor Fugue, a lusty fugue for two pianos, plus some Debussy pieces arranged for two pianos by Schumann.

The story of HMSMS since that time has been one of continued growth and acceptance by each succeeding class and generation of HMS students. It would be great to have space to show the programs or list all the students and faculty who have performed. There have been all sorts of concert performances: classical music, popular music, jazz combos (e.g., "Sawdust" about 1975), solos and singers of all varieties.

Virginia (Mrs. Joseph) Murray sang some lovely soprano songs for us on one occasion. Oliver Cope, Henry Allen, Bernie Davis, Alexander Leaf, Norman Letvin and many other faculty have played in the concerts. There have been some humorous bit parts, including parodies of various operas. At one point we had a Mozart duet of harpsichord (Ronald Epstein '84) and flute (Ilonna Rimm '81), one of Mozart's few pieces for this combination. The Benacerraf family, en masse, put on the Hindemith Quintet for Woodwinds. Later, Baruj Benacerraf played his composition for the computer.

We have had several musicians of talent well known beyond HMS. Rick Kogan '81 was a pianist who played a program for HMSMS about 1980. On that particular evening we found that none of us could get into the Vanderbilt common room. It was absolutely jammed. There were cars lined up on both sides of Longwood Avenue as far as the eye could see. Kogan's concert was a sell-out because he was already well known to college students all over Boston.

Rick Westheimer, a surgical resident at the Brigham, had been a professional pianist before he went to medical school and thence into surgery. He had played all of the Beethoven concertos with the Cleveland Symphony. For HMSMS he played the Chopin Ballade in G Minor, one of the most difficult Chopinesque showpieces in the piano repertoire.

HMSMS has been a place for many instrumentalists: harpists, hornists, bassoonists, clarinetists, flautists, guitarists, pianists, cellists, violinists, kazooists and those who can play on a cross-cut saw. Edward Chen '88 on the violin, Jack Stabile '89 on the piano, and Ann Marie Gorczyca (Harvard School of Dental Medicine '88) on the flute have all been stellar performers in these last few years. Yeow Cheng Ma '77, the sister of the great cellist Yo-Yo Ma, played a Brahms quartet in 1977 with Oliver Cope '28, Jonathan Braun '79 and Peter Thurlow '77. We have just learned that Samuel Wong '88 will become the conductor of the New York Youth Symphony and make a career of both music and medicine.

Formerly, money was raised for each of the HMSMS concerts by passing around a box as the deacons do at a church service. More recently the dean's Vanderbilt Hall committee has helped out with financial support.

The Aesculapian Club gave the present Steinway piano to Vanderbilt Hall about 15 or 20 years ago. This year at the annual Aesculapian alumni meeting, chaired by Cliff Barger '43A, the piano was much in evidence. It had been rebuilt and returned. Dr. Barger had had a little plaque placed on the piano indicating that it was a gift from the Aesculapian Club, a group associated with medical school music over the 86 years of its existence.

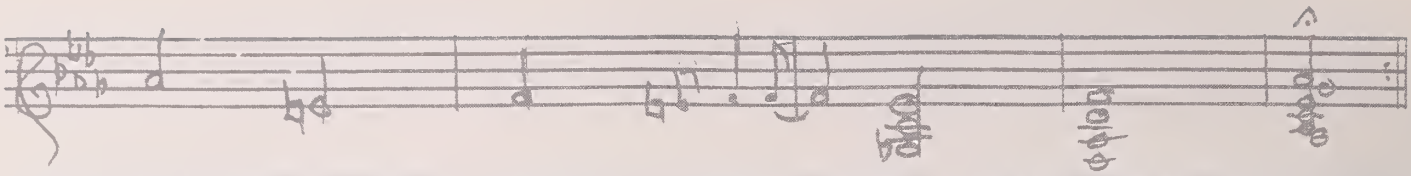
Vincent Reale '68, a plastic surgeon in Rochester, returned for this occasion to play for us again. He is another of the world-class musicians who have graduated from HMS; a superb violinist, he had played a major role in medical school music as a student. He played his own collection of dances, gavottes and gigues culled from the violin sonatas and partitas of J.S. Bach.

There are innumerable names of talented musicians in the HMS community who should have been mentioned. It is a universal hope that more of the faculty (including residents and fellows) will perform with the HMSMS. Annette Benacerraf (harpsichord) of the department of pathology is now providing strong guidance for HMSMS, assisted by Philip Drinker (French horn) of the bioengineering department of Brigham and Women's Hospital.

In addition to two HMSMS concerts per year, there are many other musical events at HMS and the hospitals, such as the "Divertimento" String



HMSMS Choral Group 1987



Quartet and the concert series given each year in the MGH Chapel, the "Brigham Brass," who play at Christmastime under the leadership of Philip Drinker, and several other groups. The Longwood Symphony recruits musicians from the whole Longwood area, whether medical or not, and gives highly professional concerts once or twice a year, often in Jordan Hall under a conductor from the New England Conservatory. Ann Marie Gorczyca is chairperson of the Longwood Symphony organization this year.

The second-year show and the fourth-year show involve the creativity of both composers and performers, all of them students at HMS. The excellence of these performances and the talents displayed put to shame our amateur doings of 50 years ago.

The arts of music form an important part of the creativity at HMS among students and faculty, and in the life of thousands of physicians the world over. And for just the pure joy of listening or watching, creativity aside, the arts are a major hobby of physicians throughout the world. □

Francis D. Moore '39 is HMS Moseley Professor of Surgery, Emeritus *and founding member of the Harvard Medical School Music Society.*

The Charismatic Leader

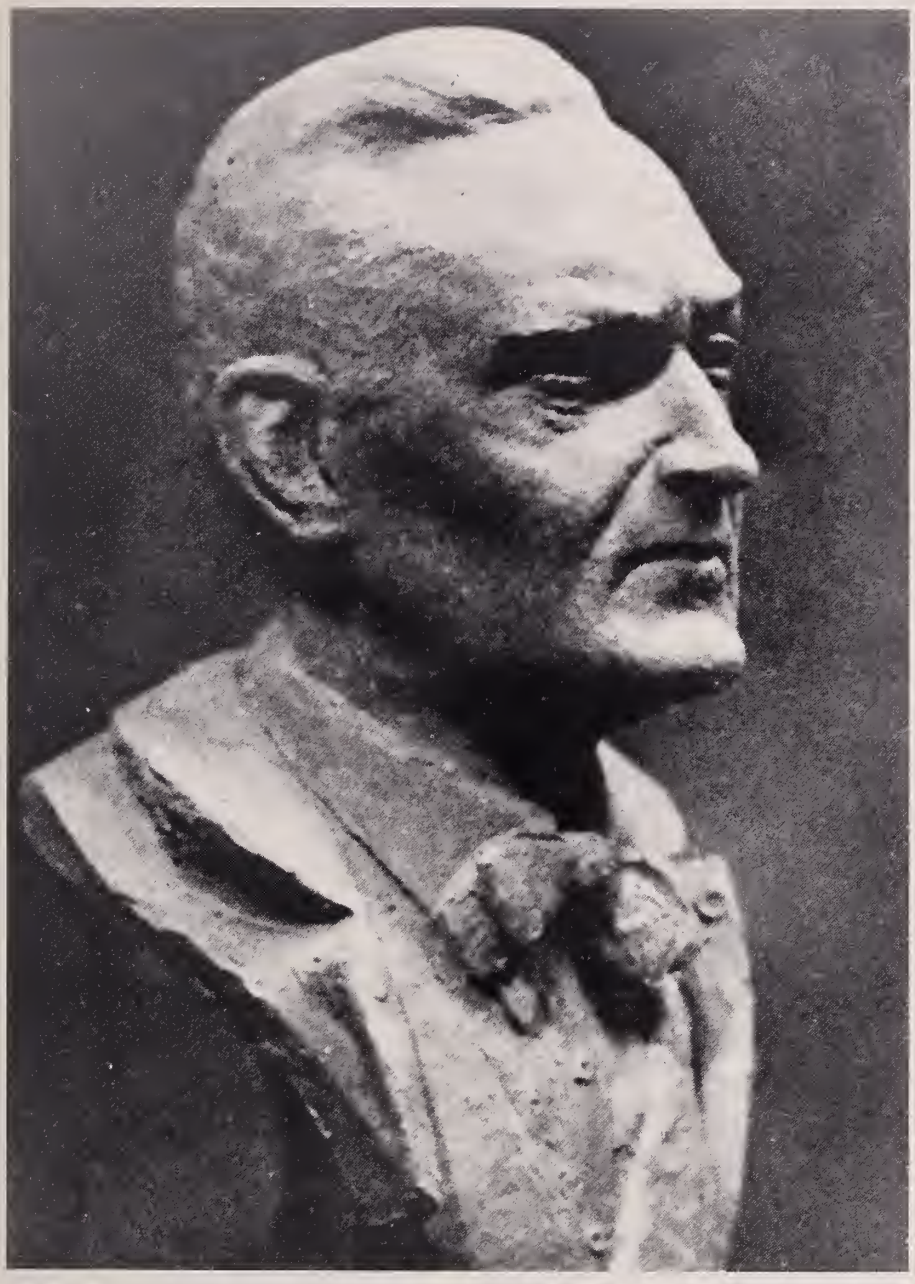
by Margaret Brenman-Gibson

Not long ago, I attended a conference of historians, met to discuss the nature of what they called "the charismatic process." In attendance were scholars who had studied the lives and times of a variety of political and religious leaders (some prophets, some activists). The task of the conference was first to discover what specific talents, gifts, or graces these leaders shared and then to explore their relationship with their followers. For the first two days, we were heaped with fascinating biographical and historical information about several historical personages, and on the third day we were to discover what they had in common. At this point, the conference fell into a paralyzed despair. It was only (at least so it seemed to me) when we abandoned the search for a list of specific traits or talents and sought the answer to our riddle in a holistic, "complementary" approach that we once more took heart. In each instance, the leader had undergone a profound personal struggle with a sense of fragmentation and bondage. When he had managed creatively to solve his personal crisis of identity (often after a period of great agony—Giuseppe Mazzini called his own experience a "tempest of doubt") and to establish a cohesive, "one-pointed" unity within the diversities of himself, he experienced a joyous "coming together" and, at the same time, an unprecedented freedom.

But the leader's own reorganization represents only one piece of the jigsaw puzzle. Until it is met by a communal response, born of collective need, he does not become a charismatic leader. Nor can the aspiring artist be fulfilled without *some* audience, however small. In each instance, to be sure, the man under scrutiny has been gifted. But, beyond his personal gifts, the crucial secret of his leadership appeared to lie in the "fit"—the mutuality—between his own mobilization of capacities (in response to a sensed need or danger) and the needs of a significant portion of his society. Thus, whether it is Martin Luther reforming Western Christendom, Giuseppe Mazzini envisioning a mythologically liberated city of Rome at the center of a "free and united Italy," Charles de Gaulle restoring "unity and self-esteem to a free France," or Reverend George Whitefield preaching religious freedom in the coalfields to 20,000 American colonists trembling on the verge of *political* freedom, the quest of the *followers* of all these men is the same: to dissolve the boundaries between them and the leader so that each can share in his *liberation and unification*—in short, in the deliverance he has promised. Just as the playwright's inner civil war is externalized onto the stage, offering (by his dramatic resolutions) unification and liberation to his audience, so does the "stage of history" again and again offer, by way of its leaders, collective resolutions to collective aspirations and conflicts. This is not to say that the actions recommended and taken by the leader and his movement (for example, a revolution to unseat an autocracy or to divide the arable land) cannot be understood *also* on their manifest level, but that the "charismatic process" cannot be understood *solely* in terms of these external economic or political objectives.

A last word: with all the attendant difficulties, it is easier to study creative processes in great artists, scientists, or charismatic leaders—because there are more data available about their lives than about the lives of average people. The teacher whom we remember—and all have at least one in a lifetime—is a person who brings about, by that same mutuality, the same joyful affirmation and recognition created by the artist or leader. □

Margaret Brenson-Gibson, PhD, is clinical professor of psychology in the HMS department of psychiatry. Research on the creative process in the individual and in society is her major interest. She is also a peace activist. She has written a biography of playwright Clifford Odets and is herself married to a playwright. William Gibson. This excerpt is from "Notes on the Study of Creative Process" in Psychology Versus Metapsychology *(International Universities Press, 1976).*



SCULPTURE OF HANS ZINSSER BY EDWARD G. DENNIS '40 FOR HIS CLASS YEARBOOK.

As We Remember Him

Hans Zinsser came to Harvard from Columbia in 1923 as professor of bacteriology, and from 1935 until his death in 1940 was Charles Wilder Professor of Bacteriology and Immunology.

Wide-ranging in his interests and abilities, he was without doubt one of Harvard's most charismatic teachers. It was he who lured John Enders away from philology to embark on his brilliant career in bacteriology.

Few have written as creatively about death and none has created his own immortality more objectively than Zinsser in the brief closing chapter of his autobiography, As I Remember Him. *Zinsser's intimation of the separateness of the body and the soul was not unlike that of his close friend Francis Peabody who wrote: "This is not so bad as most people think. It's like leaving behind one an old suit of clothes." So Zinsser—R.S.—scolded his body, "It seems so silly that you must take me with you when I am just beginning to get dry behind the ears."*

I, too, remember him—lecturing to our class just about the time of that unforgettable scene when he and his doctor stood together a long time looking out on the bright afternoon sun reflected from the waters of the Charles River Basin. —*J.G.S.*

Chapter XXVI:

IN WHICH DEATH IS MET ADAGIO AND ALLEGRO INSTEAD OF, AS OFTEN, MAESTOSO OR LARGO SOSTENUTO.

R.S. returned from his last professional journey badly damaged. On the steamer he was humiliated by the fact that not only occasional youngsters but even a British general of approximately his own age could outlast him at deck tennis. Also the sun, instead of tinging his skin a healthy brown, turned him the lemon yellow of the sunburned anaemic. He made a tentative diagnosis on himself before arrival in port.

So when he got home, he went to see an old friend, a doctor, who had pulled him through a nasty infection a few years before. This friend to whom he had gone was one of those precious individuals whom nature had meant to be physicians. He was fond of R.S. and showed it most helpfully by his affectionate abstinence from any expression of sympathy. And R.S. told me that, together, this good friend and he stood for a long time at the office window, looking out at the Charles River Basin. It was one of Lowell's June days, in the early afternoon. Bright sunshine was reflected from the water and from dozens of little white sails on the dinghies that were racing along the Cambridge shore. The Esplanade was alive with contented men and women, strolling and sitting on the benches; and the sounds of playing children came up through the open window like the voices of many birds. The world looked a bright and attractive place.

But in those few minutes, R.S. told me, something took place in his mind that he regarded as a sort of compensatory adjustment to the thought that

From *As I Remember Him* by Hans Zinsser. Copyright 1940 by Hans Zinsser. Published by Little, Brown and Co.

Each moment of the day, every prospect on meadow or hill or sea, every change of light from dawn to dusk, excited him emotionally with an unexpected clarity of perception.

he would soon be dead. In the prospect of death, life seemed to be given new meaning and fresh poignancy. It seemed, he said, from that moment, as though all that his heart felt and his senses perceived were taking on a "deep autumnal tone" and an increased vividness. From now on, instead of being saddened, he found—to his own delighted astonishment—that his sensitiveness to the simplest experiences, even for things that in other years he might hardly have noticed, was infinitely enhanced. When he awoke in the mornings, the early sun striking across the bed, the light on the branches of the trees outside his window, the noise of his sparrows, and all the sounds of the awakening street aroused in him all kinds of gentle and pleasing memories of days long past which had left their imprints—indelible but, until now, not consciously realized—of contentment and happiness. It was quite the opposite of the "woe of the remembering of happy times" in Canto V of the *Inferno*, beginning: *"Nessun maggior dolore"* and so on. R.S. felt a deeper tenderness for the people whom he loved, and a warmer sympathy and understanding for many whose friendship he had lost in one way or another. Each moment of the day, every prospect on meadow or hill or sea, every change of light from dawn to dusk, excited him emotionally with an unexpected clarity of perception and a new suggestiveness of association. Thinking of the shortness of the time still left him, he reread—as though for a sort of P.P.C. conversation—the books that had meant much to him at the various stages of his life, and found them more moving, more deeply wise, or more hilariously robust, according to their natures. Everything that went on about him or within him struck upon his heart and mind with a new and powerful resonance. So, on the whole, he was far from either meriting or desiring sympathy. The only thing that depressed him at all in those days was the thought of horses. He couldn't stand the sight of his saddles, his bridles, and the various bits that hung about his bedroom—and which he now packed out of sight in the cellar.

As his malady progressed, he had another variety of experience which, to some others more conditioned to religious belief than he was, might have signified an intimation of the separateness of body and soul.

He said to me: "Here I am, *me* as always. My mind more alive and vivid than ever before; my sensitiveness keener; my affections stronger. I seem for the first time to see the world in clear perspective; I love people more deeply and more comprehensively; I seem to be just beginning to learn my business and see my work in its proper relationship to science as a whole; I seem to myself to have entered into a period of stronger feelings and saner understanding. And yet here am I—essentially unchanged except for a sort of distillation into a more concentrated *me*—held in a damaged body which will extinguish me with it when it dies. If it were a horse I was riding that went lame or broke its neck, or a ship on which I was traveling that sprang a leak, I could transfer to another one and leave the old vehicle behind. As it is, my mind and my spirit, my thoughts and my love, all that I really am, is inseparably tied up with the failing capacities of these outworn organs.

"Yet," he continued, apostrophizing in a serio-comic mood, "poor viscera, I can hardly blame you! You have done your best, and have served me better than could be expected of organs so abused. When I think of the things that have flowed over and through you! Innumerable varieties of fermented hops and malt and of the grapes of all countries and climates: Vouvray, Anjou, Chablis, Haut Sauternes, Chambertin, Nuits-Saint-Georges, Riesling, Lachryma Christi, Johannisthaler, Berncastler, Saint-Julien, Clos de Mouche, Liebfrauenmilch; endless amounts of *pinard* and *vin du pays*; the sour wines of Alsace, of North Africa, and of the Pyrenees; the stronger ones of Spain—Oporto, Sherry Madeira, Malaga; the Tokay of Hungary; sparkling vintages of Burgundy and of Champagne; Veuve Cliquot and her brothers Mumm and Pommery; and the California brews bought in demijohns; to say nothing of the distillates—flavored and unflavored; cognac, Three-Star Hennessy; whiskeys—Scotch, Irish, Canadian, rye, bourbon, and the yellowish moonshine, colored with chicken droppings, from the Blue Hills; and gin—genuine and synthetic; Schlibovitz from the Balkans, Starka from Poland, and the vodka of the Steppes; Crème de menthe and cacao, Marie Brizard, Cointreau, and Calvados.

"No, no, my organs! I cannot feel that you have let me down. It is quite the other way round. Only now it seems so silly that you must take me with you when I am just beginning to get dry behind the ears."

Though he had these spells of half-humorous revolt against the idea that his personality and his increasing joy of living should be so helplessly at the mercy of his deteriorating body, he was

still grateful that, in his case, it was this and not the mind that was going to pieces first. He was not, at any time, tempted to seek strength in wishful surrender to a religious faith in which far greater men than he had taken refuge just before death. When this had, astonishingly, happened in the cases of several of his intimate friends, he regarded it as a capitulation of the mind to the fatigue of suffering. Indeed, he became more firm in his determination to see things out consistently along his own lines of resignation to agnostic uncertainty—as his father had done before him. Moving further away, therefore, from faith in any comprehensible conception of God, he yet grew closer in conviction of the wisdom and guiding integrity of the compassionate philosophy of Christ.

As his disease caught up with him, R.S. felt increasingly grateful for the fact that death was coming to him with due warning, and gradually. So many times in his active life he had been near sudden death by accident, violence, or acute disease; and always he had thought that rapid and unexpected extinction would be most merciful. But now he was thankful that he had time to compose his spirit, and to spend a last year in affectionate and actually merry association with those dear to him. He set down this feeling in his last sonnet:

Now is death merciful. He calls me
hence
Gently, with friendly soothing of my
fears
Of ugly age and feeble impotence
And cruel disintegration of slow years.
Nor does he leap upon me unaware
Like some wild beast that hungers for
its prey,
But gives me kindly warning to prepare:
Before I go, to kiss your tears away.

How sweet the summer! And the
autumn shone
Late warmth within our hearts as
in the sky,
Ripening rich harvests that our love
had sown.
How good that 'ere the winter comes,
I die!
Then, ageless, in your heart I'll
come to rest
Serene and proud, as when you
loved me best.

It is apparent, therefore, that in his last months R.S. achieved a certain degree of philosophical tranquillity and resignation. It would be a mistake, however, to suppose that, apart from his purely personal reactions to his own fate and his immediate environment, he was less confused at the time of his death than I have described him in my introductory chapter. When he gazed beyond the circle of his own work, his family and friends, into the rushing world about him, he was completely bewildered. He had a little the same resentful feeling that he remembered having when, as a boy, he had walked through Normandy and had to jump into the ditch to let one of the recently invented automobiles rattle by—knowing that its passengers would have dinner at the town where he expected to arrive two days later. It was all moving too fast for him. Indeed, he was not sure whether the world that was rushing by was going forward or backward. He wondered whether he had not, perhaps, been born a little too soon and remained unable to catch up with his time. The world to which he had been born had not alone speeded up with that acceleration of which Henry Adams complained, but it had actually seemed to change direction. Scientific progress had brought as much sorrow as happiness. With immensely enhanced powers of production, millions were out of work and starving. Ideas of democracy and individual freedom which he had accepted as the gradually evolved goals of centuries of struggle were not only being denied, but entire nations were frantically intent on destroying them. Great racial masses seemed willing to fight and perish, if necessary, for their own enslavement. New so-called "ideologies" were tearing up the foundations of all that men had thought firm and permanently established. Something had cracked in the old Western civilization, and its walls and lofty towers—cemented with the sweat and blood of their forefathers—were tumbling about men's ears. And the intellectual calamity seemed to be that no one could say whether the turmoil was the result of avoidable stupidity or of the operation of laws of economic and social evolution that were acting on mankind as other laws had acted on the dinosaur and the sabre-toothed tiger.

But in all these things he could never tell, before he died, whether the fault was in him or in the trends he disliked. He didn't admit this, of course, and remained, to the last, argumentatively arrogant. But I knew that at the time of his death he was as thoroughly bewildered as any thoughtful individual of our time is bound to be.

All of which goes to prove that, as I pointed out in the first chapter, R.S. was really a quite ordinary person about whom it was hardly worth while to write a book. □

I knew that at the time of his death he was as thoroughly bewildered as any thoughtful individual of our time is bound to be.

THE PHYSICIAN WHO MIGHT HAVE BEEN PRESIDENT

by Alfred Jay Bollet

When the delegates to the Republican National Convention met in Chicago in early June 1920, they were certain that their nominee would be elected president of the United States. A physician and Harvard Medical School graduate, Leonard Wood had won most of the primaries, led in the first four ballots, and some later ballots as well. But he could not capture the nomination. The convention turned to a dark horse, Sen. Warren G. Harding, ending Wood's chance for the presidency.

Wood had graduated from HMS but had been fired from a surgical internship at Boston City Hospital. He joined the army, where his remarkable career included winning the Medal of Honor, and serving as White House physician and as commander of the famous Rough Riders during the Spanish-American War. He was subsequently military governor of post-war Cuba, chief-of-staff of the army and, after his unsuccessful bid for the presidency, governor-general of the Philippines.

During much of this period, Wood had neurologic disability resulting from a brain tumor. He was one of the first patients treated neurosurgically by Harvey Cushing for a meningioma, but died at the Peter Bent Brigham Hospital in 1927 during an attempt to operate on a recurrence. Wood's career is a fascinating story of achievement, primarily in public service outside of medicine. It illustrates, also, the key role of Cushing in the development of neurosurgery.

Wood's father was also a physician, with a degree from the Eclectic Medical College of Pennsylvania. He practiced in Cape Cod, where Leonard grew up. Leonard graduated from HMS in 1883 and on the basis of a competitive examination, obtained a surgical internship at BCH. There he and a co-intern were in constant trouble for violating hospital rules. Their escapades sound like episodes from "M*A*S*H." They repeatedly got out of trouble by confusing the hospital superintendent with fast talk.

But the superintendent finally fired Wood for operating on a young boy without waiting for the proper supervision to arrive. A later inquiry after Wood was famous exonerated him in view of the emergency circumstances, and it seems as if the superintendent was just looking for an excuse to 'get' Wood in view of his prior transgressions.

After a brief try at private practice, Wood took a competitive examination for the army, scored very high, and was immediately assigned to Fort Huachuca in Arizona Territory. He had to quickly learn to ride because he was assigned to the unit pursuing the feared Apache leader Geronimo, whose band had gone on the warpath, killing settlers in New Mexico, Arizona and across the border in Mexico. Wood's medical skills, the marvelous physical stamina he maintained all his life, and his interest in military matters made him an invaluable aide. He often acted as military leader of patrol units as he was the only officer in the field besides the commander.

When Geronimo and his band finally surrendered, after two years of continuous pursuit through rugged mountains, Wood was highly complimented in the final report of the expedition. Twelve years later, on April 2, 1898, he was given the Medal of Honor.

Between 1886 and 1898 Wood served at the Presidio in San Francisco, then a post near Atlanta, and finally in Washington where he was White House physician. During this period he was also involved in the early days of collegiate football. He organized an army team to play the University of California, and in Atlanta coached and played on the Georgia Tech team. Eligibility rules were much less formal then, but Wood actually had matriculated at Georgia Tech, to take a course in woodworking.

Opposite: Portrait of Leonard Wood by John Singer Sargent.



He starred in one of the early games between the University of Georgia and Georgia Tech, scoring all five touchdowns for Tech. The game took place in Athens, hometown of U. of Georgia, and after the game he barely escaped being maimed by an irate mob who chased him to the train.

As White House physician, Wood took care of the families of Presidents Cleveland and McKinley. His son attended a kindergarten set up in the White House by Cleveland's wife, who had the first child born to an incumbent president. McKinley became fond of Wood and dependent on him for care of his psychiatrically incapacitated wife, to whom he was devoted. During this period Wood became very close to the assistant secretary of the navy, Theodore Roosevelt. Their two families joined in many outings to Rock Creek Park.

Wood was looking for an opportunity to become a line officer, and learned all he could about military matters in every assignment. When the Spanish-American War began on April 19, 1898, he tried unsuccessfully to convince the governor of Massachusetts to assign him command of a regiment of volunteer cavalry.

Roosevelt wanted a similar role for himself. When the governor of Arizona got a provision for three new regiments of volunteers through Congress, he offered one to Roosevelt, who accepted on condition that he be the lieutenant-colonel and Wood, with much more military knowledge, be given the command as colonel.

The troop was quickly organized and equipped by Wood, with volunteers from among the cowboys of the West and the colleges of the East. The regiment trained at Fort Sam Houston in Texas. The press, enamored with this project, kept referring to the brigade as "Roosevelt's Rough Riders." But after the brigade landed in Cuba and started marching toward the Spanish stronghold at Santiago, they called themselves "Wood's Weary Walkers."

The Rough Riders had been carefully, but hurriedly, equipped by Wood with good guns, smokeless powder and thin khaki uniforms, which made them much more comfortable in the Cuban heat than their regular army comrades clad in the standard government-issue flannel. The entire unit, and Wood in particular, distinguished themselves in combat in Cuba; Wood was given a battle-field promotion to brigadier-general, with a larger command. Then Roosevelt assumed command of the Rough Riders before the engagement on San Juan Hill, which greatly enhanced his political career.



Teddy Roosevelt and Leonard Wood

When the war ended, Wood was made military governor of Santiago. His skill as an administrator and diplomat quickly became evident. Santiago was filled with dirt and disease, including malaria, yellow fever, dysentery and typhoid. It was overcrowded with starving refugees. He quickly made it the cleanest city on the island. One of his sergeants commented, "When Wood gets through, the flies'll starve to death in Santiago."

Despite his success in Santiago, which virtually eliminated typhoid fever and dysentery, Wood noted that yellow fever remained a problem. This puzzled him since yellow fever was thought to be transmitted, like typhoid, by 'contagion' from person-to-person because of filth.

Appalled by the persistence of yellow fever, Wood played a role in persuading Surgeon General Sternberg to appoint a commission to study the cause of the disease and its mode of transmission. The commission, headed by Major Walter Reed, quickly disproved the hypothesis that a bacillus was responsible. They turned to the idea of a Cuban physician, Carlos Finlay, that mosquitoes were transmitting the disease. Initial experiments pointed strongly in that direction, particularly when one of the young members of the team, Jesse Lazear, died of yellow fever acquired through the bite of a mosquito known to have fed on a patient with the disease.

After Lazear died, the Reed Commission studies ceased due to lack of money. Reed had planned extensive, rigorous experiments to establish the role of the mosquito conclusively. He sought out General Wood, now military governor of all Cuba.

Both Reed and Wood knew that the surgeon general was stubbornly skeptical about the mosquito theory, having failed in his own attempts to demonstrate the role of the mosquito years earlier. In retrospect, Sternberg had failed because he had not allowed for an incubation period in the insect; such a concept was unknown at the time. In the meantime, the need for an incubation period in the transmission of malaria had been demonstrated, and others had shown a lag in the development of an epidemic of yellow fever after the initial case was observed. Reed now wanted to test the mosquito hypothesis with this incubation concept included.

If Wood had passed Reed's request for funds up through regular channels, it would have meant a permanent end to the experiments. Together in Wood's office they discussed the definitive studies, and Wood decided to find the necessary money himself. Just that morning he had signed a bill providing $10,000 to strengthen the police force in Havana. Wood told Reed, "This work is of more importance to Cuba than the capture of a few thieves. I will give you $10,000, and if that proves insufficient, I will give you $10,000 more."

Wood cautioned Reed to get in writing what we would now call informed consent from his volunteers, and then protected Reed from interference with his work. Reed later called Wood's support "invaluable." The experimental station, named Camp Lazear, was built at Quemados, and the studies were successfully completed. Twice Wood intervened to save the project when the surgeon general ordered it discontinued because he needed the doctors elsewhere.

Later Wood played a role in convincing Major Gorgas, the sanitation officer, to undertake to control mosquitoes. Gorgas agreed that mosquitoes transmitted yellow fever, but he did not think they were the only or even the most important mode of transmission. Under pressure from Wood, in March 1901 Gorgas began the campaign to eliminate mosquitoes, a campaign that freed Havana from yellow fever for the first time in 200 years.

President McKinley nominated

Wood for permanent promotion to the rank of brigadier-general in the regular army. At that time he was a temporary major-general in the volunteers, but held the permanent rank of captain in the medical corps. McKinley later put Wood in for promotion to major-general, but by the time that promotion was considered in the Senate, Roosevelt was president and it was thought to be favoritism. Wood eventually became a major-general.

After he had assisted the political forces in Cuba to develop a constitution, and turned over the government to them, Wood was assigned to govern the Moro Province in the Philippines. There his organizational skill and tough policies—backed by military action when necessary—pacified and organized that area. With increasing seniority, he held major administrative roles in the army, and then, as the senior general officer, was appointed chief-of-staff from 1910 to 1914.

Again his administrative skills earned him respect, though also political enemies. He pressed for a National Guard with trained reserve officers. He also pressed for an army air service, stating in 1910 that, "It may be one year, it may be more, but sooner or later the aeroplane will be the greatest factor of the century in the world's affairs."

After Woodrow Wilson was elected president, Wood was not reappointed chief-of-staff, and he returned to lesser roles in the army. But he continued to speak out forcefully for military preparedness, knowing the woeful state of the army and that war was obviously coming. He organized volunteer summer training camps to demonstrate the value of a trained reserve, an idea that was not adopted until much later.

Wood and Wilson were political enemies. Trying to be peacemaker in Europe, Wilson refused to take any steps to prepare for war. As Teddy Roosevelt put it, "Wilson drifted stern foremost into the war." When war did come, Wood was refused a major role in the fighting. Although he had been widely expected to get the assignment given to General Pershing, Wood was assigned only to train divisions for combat. He was the only division commander denied the chance to travel with his division to France, being literally turned back at the dockside by new orders.

Former President Roosevelt also wanted a role in the fighting and was denied. A cartoon that appeared on December 14, 1918 parodied Wilson's famous campaign slogan of 1916, showing General Wood and Teddy Roose-



WELL, "HE KEPT *US* OUT OF WAR."

velt, with the caption, "Well, he kept US out of the war!"

During the 1916 election, there was pressure for Wood to run for president, but Roosevelt still had thoughts of running, and Wood always supported him. Roosevelt refused the nomination of the Progressive party, which he had formed when he failed to get the Republican nomination in 1912, splitting the party and allowing Wilson's election. In 1916 the Republican party nominated Supreme Court Justice Charles Evans Hughes, who almost defeated Wilson's bid for re-election.

Wood expected to support Roosevelt again in 1920, but Teddy's sudden death in 1919 changed his plans. Wood began his own campaign, entered all the primaries, and won almost all of them. One major poll had him far ahead, receiving a popular vote seven times greater than Harding's and eight times greater than Coolidge's. He had a huge following.

But Wood's platform seemed to be based on policies that were needed in 1916, while the problems of 1920 were different. Wood supported U.S. entry into the League of Nations, provided we retained unimpaired freedom of action. But a group of powerful Republican senators, including Henry Cabot Lodge, had already defeated Wilson's proposal for membership in the league, and wanted a president they could influence, preferably one of their own club. They chose Warren Harding, whose main qualification was that he had never offended anyone.

Reporters were amazed at Harding's speeches; they could listen for an hour and find they had made no notes. He apparently had the greatest talent in the U.S. Senate for long speeches that never actually said anything—and thus he made no enemies.

When the voting for the presidential nomination began, Wood led on the first ballot with 287 1/2 delegates; in second place, Governor Lowden of Illinois had 211 1/2 delegates, with 498 needed for the nomination. Wood also led on the next three ballots, his delegate count increasing progressively to 314 1/2. But he and Lowden deadlocked, neither able to obtain the necessary majority. The senatorial cabal then began their move for Harding, who was considered a dark horse. They capitalized on sentiment against both Wood and Lowden for spending large sums in the pre-convention campaign; huge expenditures were not yet common, and Wood had spent $1.2 million.

During an overnight recess, Lowden and Wood's representatives discussed joining forces to stop Harding, but neither side would accept second place on the ticket. After the recess, the swing to Harding gained momentum, and Lodge, who chaired the convention, refused to hear a call for another recess by Wood's forces. Harding led for the first time on the ninth ballot, and was nominated on the tenth.

During his long and distinguished career, Wood suffered intermittently from a brain tumor. The tumor apparently began as a result of injury. While governor of Santiago in Cuba, Wood had accidentally struck his head against a chandelier and lost consciousness for several minutes. He had had no immediate symptoms, but subsequently developed a small, slightly tender projection, thought to be an exostosis, at that spot over the vertex of his cranium.

Four years later, in 1902, Wood first noticed some numbness in the toes of his left foot, and heaviness of his left leg. A spastic limp developed and, although an expert horseman after his service in the Geronimo campaign, he became awkward in the saddle.

While governor of the Moro Province, he experienced a slowly advancing cramp that began in the left great toe and extended up the leg, involving the diaphragm and arm. Reasoning that this was a developing convulsion, he obtained and inhaled some chloroform,

which stopped the spasm. He had a similar aura repeatedly thereafter, so he usually carried a vial of chloroform in a handkerchief in his pocket that could stop the seizure. On two occasions, when he forgot the chloroform, the aura was followed by a severe convulsion and unconsciousness.

On July 8, 1905, during a leave at home, Wood arranged for a friend, Dr. Arthur T. Cabot of Boston, to do an exploratory operation on his skull under anaesthesia at a small private hospital in Boston. A small disc of bone was removed from the top of his skull; the underlying dura was reportedly "normal appearing" and was not opened. Dr. F.B. Mallory's pathological report called it a "psammoma of the diploe (fibrosarcoma of the spindle cell variety)."

The procedure did not relieve the focal attacks, and on his way back to the Philippines Wood saw several neurologists in Europe, none of whom believed that he had a subdural tumor in view of his robust good health and the absence of any increased intracranial pressure.

On March 28, 1909, he was seen in a series of consultations by Drs. Harvey Cushing, William Osler and S. Weir Mitchell, who noted he had some spasticity of his left arm and leg, with slightly decreased sensation of the foot. He also had the characteristic steppage gait of unilateral pyramidal tract degeneration, according to Cushing's records. Roentgenograms showed the small operative defect in the skull, and dilated vessels nearby. Cushing recorded, "an operation was suggested but not urged."



Wood and his wife

By 1910, when Wood was nominated as chief-of-staff, awkwardness of his left arm and leg had increased, and warnings of impending seizures frequently recurred. He sent a telegram to Cushing announcing that he was coming to Baltimore for an exploration, whatever the risk. He was admitted to Johns Hopkins Hospital, and surgery was begun on February 5 under ether anaesthesia.

Cushing made a large incision, raising the flap that encircled the first scar. He ran into a lot of vascularity, and after noting firmness of the dura, indicating the presence of the tumor, replaced the flap. Four days later, on February 9, 1910, again using general anaesthesia, he re-elevated the flap, opened the dura and exposed the tumor. At first Cushing thought it was glioma, but blunt dissection revealed that the tumor was encapsulated, and he removed it. The tumor involved the margin of the sinus, and there was considerable bleeding. It weighed 198 grams, and was 8 cm in diameter.

Wood recovered quickly, was discharged a month later, "and as though nothing had happened, immediately resumed his work with accustomed vigor," Cushing noted. He was perfectly well, except for some residual spasticity of his foot which caused a persistent limp. There were no more focal seizures.

In recording his experiences with meningiomas, Cushing listed Wood as case number four. The first case had been a spinal cord lesion removed in October 1903. The first patient with an intracranial tumor, operated on in June 1908, had died three days post-operatively; the second, operated on in November 1909, had survived. Wood was next.

Wood remained vigorous and active. He remained asymptomatic except for an almost imperceptible limp, until 1921 when he began to have occasional mild Jacksonian seizures in the left foot. By 1923, spasticity in that foot had increased and had also begun in his left hand. To try to control his left hand, he used it in target practice daily, and was able to outshoot most of his staff who used their dominant hands.

Wood was in an automobile accident in April 1927, which caused a



Inspecting the troops at Plattsburg.

severe blow to the right side of his head. He used the accident as an excuse to seek treatment for his lameness. He returned to the U.S., reported to President Coolidge, and then was admitted to the Peter Bent Brigham Hospital, where Cushing was now surgeon-in-chief.

Examination revealed an almost complete spastic left hemiplegia, with contracture of the left arm, sagging of the face and ptosis. There was a left homonomous hemianopsia, and loss of position sense on the left side. Wood could barely get out of a chair and take a few steps. He had lost reading vision. An X-ray showed erosion of the bone in the region of the earlier skull flap.

At 9:30 AM on August 6, 1927, under local anaesthesia, Cushing began to elevate the old flap, knowing he would have great difficulty with a lesion large enough to produce such extensive neurologic dysfunction. Bleeding was a major problem from the start. The newly introduced electrosurgical techniques helped, and finally he made an excavation in the tumor "large enough to hold a lemon."

It was now 1 PM. Cushing proposed closing the scalp and continuing later in a second stage. Wood, who had been conscious all along, joking with the surgeons during the operation, objected. He wanted to avoid a second stage so his wife wouldn't have to worry longer about the ultimate outcome. His blood pressure had recovered from an early dip due to blood loss, and his pulse had never gone above 80. Cushing complied, and after giving him a 500 cc transfusion, at 1:40 PM proceeded to "liberate the remaining shell of the growth."

Immediately, the huge lesion began to extrude through the incision, and, as Cushing wrote, "There was no further possibility of backing out." Another 500 cc of blood was given "from another donor." (Transfusions were direct, arm to arm.) The large tumor sac was finally, slowly tilted out.

After closing, Wood was kept on the table, and at 5:30 PM his blood pressure fell and the wound was reopened; a large clot was removed with the packing. Another transfusion restored hemodynamic stability; the "wound was closed securely (6:20 PM), and it was felt that we were safely through."

However, "two hours later (8:20 PM) the pulse and respirations showed an unaccountable, sudden rise; he no longer responded, became increasingly dyspneic, and died five hours later." The tumor removed this time was estimated to weigh 350 grams; the "excavated shell alone . . . weighed 123 grams."

Cushing ended his description of this operative experience with the following paragraph: "So ended the life of a gallant man through failure on a surgeon's part to exercise good judgment regarding the proper time in the course of a critical procedure to postpone its completion for a second stage."

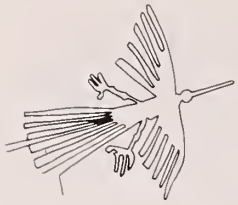
Throughout his book summarizing all of his experiences with meningiomas, Cushing gave the names of the patients. In introducing the section describing this case, Cushing stated: "Leonard Wood was a man who took the slings of outrageous fortune with gallantry; and could he have been consulted about the propriety of having the case reported at this time without anonymity he might possibly have hesitated, but in order to spare the writer's feelings rather than his own."

I think the record of Leonard Wood's illness tells us a great deal about both the patient and the surgeon. □

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A Brave "Rough Rider" Is Laid to Rest. Scene on the Way to Arlington National Cemetery, Showing the Flag-Draped Caisson Which Bore the Body of Maj.-Gen. Leonard Wood, Governor-General of the Philippines and Father of the Citizens' Military Training System.



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